

Part III: Education and Leadership

Chapter 7

A Workshop on Large Scale Conservation: An Exercise in Group Problem Solving and Leadership

Tristan Peter-Contesse, Susan G. Clark, and David Mattson¹

ABSTRACT

Graduate students in a large scale conservation seminar at Yale's School of Forestry & Environmental Studies designed a student-facilitated three day workshop to learn how to conduct a workshop, explore interdisciplinary problem-solving techniques, and find principles for large scale conservation. This paper describes the workshop, methods used, and results of the exercise. This report will help other people using workshops to find principles, methods, and actions for effective conservation. Once goals were set and two students were selected to be co-convenors, the group designed the workshop with the help of the instructor. The workshop began with an introduction, statement of goals, and rules for participation followed by a "mind mapping" exercise, listing of problems in large scale conservation, and an exploration of solutions and needed leadership skills. These exercises clarified principles and practices for large scale conservation and also how to conduct and participate in a problem oriented, contextual, multi-method workshop. First, mind mapping allowed students to describe their perspectives and compare them with those of others. Second, the problem oriented exercise showed shortcomings in the current approach to large scale conservation (i.e., scientific management). Third, options were generated to address these shortcomings. Finally, leadership and personality tests were given and discussed. Some participants found it difficult to move beyond conventional, disciplinary, and positivistic patterns of thought. As this became evident to students, it served as a learning exercise. Participants left the workshop with experience in organizing and leading a workshop, the ability to facilitate group exercises designed to bring a problem focus and contextual clarity to an issue, and specific knowledge of

¹Susan G. Clark (susan.g.clark@yale.edu), David J. Mattson (David_Mattson@usgs.gov) Tristan J. Peter-Contesse (tristan.pc@gmail.com), are affiliated with the Yale School of Forestry & Environmental Studies.

leadership types and skills essential for success in large scale conservation and environmental management.

These exercises clarified principles and practices for large scale conservation and also how to conduct and participate in a problem oriented, contextual, multi-method workshop.

Key words: *workshop, group problem solving, mind mapping, problem orientation, leadership traits and skills, personality, large scale conservation, adaptive governance*

INTRODUCTION

Practical conservation requires effective leaders who are able to skillfully integrate diverse information and the often-conflicting perspectives of participants involved. What follows is an account and appraisal of a workshop that introduced graduate students in forestry, environmental science, and environmental management to interdisciplinary problem solving techniques useful in large scale conservation and in other venues. The workshop was designed to facilitate that kind of problem solving and leadership. Leaders today are challenged by unprecedented losses in biodiversity and landscape connectivity, a changing climate, and a lack of arenas and institutions to aid their work. Nevertheless, they are expected to help design strategies and programs, including workshops, that further conservation goals in the common interest.

What follows is an account and appraisal of a workshop that introduced graduate students in forestry, environmental science, and environmental management to interdisciplinary problem solving techniques useful in large scale conservation and in other venues.

The workshop detailed here was held over three weeks (one day per week), at Yale School of Forestry & Environmental Studies (F&ES) in the context of a seminar on “Large scale conservation: Integrating science, management and policy” (Appendix A, this volume). The main goal of the workshop was to articulate a formula that participants could ultimately adapt to problems of large scale conservation, and to explore leadership skills needed in their careers. A subsidiary goal was to gain experience at designing and participating in workshops using a range of methods that can be helpful in group-based problem solving.

The purposes of this paper are to describe a method for conducting interdisciplinary workshops, report on what happened in this particular workshop, describe and analyze the insights gained about large scale conservation that came out of the workshop, and reflect on the workshop and ways to improve it. This account is descriptive and analytic, and also offers recommendations by which participants

might further hone their own problem solving skills for improved future professional performance. Most participants had been in workshops in other settings (see examples of other workshops by Clark et al. 2002, Mattson et al. In Review a,b, Rutherford et al. 2009).

METHODS

Too many large scale conservation efforts have been marked by a lack of skilled leadership and deficient decision processes, according to some observers (see Mattson et al. In Review a, Clark 2008, for example). Some efforts have failed to constructively reconcile the conflicting perspectives, demands, and expectations of participants into successful programs that advance human dignity and environmental sustainability. Much needs to be learned from experience across many cases to find a workable formula, a supporting paradigm, and to achieve tangible gains on the ground—the only place where it really matters (see Chapters 1 and 2, this volume).

The course and workshop described in this volume and in this paper can be used by students to inform better interdisciplinary problem solving in a variety of large scale conservation settings and for that matter, on all kinds of public, professional, and personal challenges.

Currently, there are multiple traditions or approaches to large scale conservation in wide use around the world, including single and multiple use, ecosystem management, and transboundary initiatives (Chapter 3, this volume, e.g., Clark, D. et al. 2009). These were explored in the workshop. For the most part, these approaches address ordinary problems focused on content issues—wherein problems are viewed as being “out there,” and in need of technical fixes (Clark 2002). The higher order (and basic) process problems inherent in conservation, such as deficiencies in governance and inadequate constitutive decision process, remain unseen and often unaddressed (Chapter 1, this volume, Clark 2008). *Adaptive governance* is the only formula/doctrine specifically designed to address all problems—ordinary, governance, and constitutive—simultaneously (see Brunner et al. 2005). It draws on an interdisciplinary problem solving approach that is problem oriented, contextual, and multi-method as described by Clark (2002) and others (e.g., Lasswell 1971). The course and workshop described in this volume and in this paper can be used by students to inform better interdisciplinary problem solving in a variety of large scale conservation settings and for that matter, on all kinds of public, professional, and personal challenges.

Goals

The overall goal of this workshop was to carry out a three-part analytic exercise that would improve participants’ skill, understanding, and insight related to large scale

conservation and leadership. It introduced participants to workshop techniques for problem solving that are useful in diverse venues. Additionally, it encouraged participants to organize their own thinking on the subject, make an assessment of the best, most practical ways forward, and position them for rapidly learning once on the job. Specific goals of this workshop were to:

- (1) gain a hands on workshop experience through analytic activities related to large scale conservation, problem solving, and leadership;
- (2) examine perspectives and traditions of large scale conservation through social process mapping, decision process analysis, and problem orientation (focused on rationality and practicality) exercises;
- (3) develop a practical guide—formula, and doctrine—for large scale conservation;
- (4) clarify participant standpoints (locate one's self in the process)—existentially, by value position, personality-wise, and in terms of leadership characteristics and skills.

Organization and participants

The workshop was convened by two graduate students. Their invitation to participants defined the overall goal as carrying out a three-part analytic exercise that would improve participants' skills, understanding, and insight into problem solving, large scale conservation, and leadership. The workshop spanned three weeks, with three days of exercises each lasting three hours. Day 1 was lead by two student facilitators and focused on a "mind mapping" exercise to help participants clarify their individual standpoints in relation to large scale conservation. Day 2 was led by three other students and focused on identifying problems inhibiting effective conservation and finding potential solutions. Day 3 was lead by David Mattson, a research scholar affiliated with Yale, who focused on leadership attributes and results of personality tests that participants had taken previously. A profile of successful leadership was produced from these exercises. The workshop was terminated with a round-robin discussion reviewing the experience.

Participants were the eighteen students in a large scale conservation seminar (Appendix A, this volume). Most students were in their mid to late 20s. Most had been born and educated in the United States, and had worked in the field of conservation, broadly defined, for between one and five years. Others came to Yale from abroad, including Costa Rica, India, and China, among other countries. Some had worked in the private sector as environmental consultants, for government agencies—such as the U.S. Forest Service—or with non-governmental organizations in the U.S. or internationally. Others had professional experience in fields outside of conservation. Most came to the course with an interest in large scale conservation, and will likely be applying its lessons to conservation problems throughout the world in the future.

Workshop design

The workshop was organized based on the seminar instructor's experience in other workshops (e.g., Clark et al. 1990). Most recently this design was used on polar bear conservation (Clark D. et al. 2009), grizzly bear management (Rutherford et al. 2009), and large scale conservation efforts (Mattson et al. In Review a). Participants were asked to read "The Policy Process: A Practical Guide for Natural Resource Professionals" (Clark 2002: 173-189). This approach emphasizes the use of empirical evidence on the situation at hand, careful and complete orientation to the problem at hand, specifying goals in relation to problems, and attention to social and decision processes (the context) influencing the problem. Participants had been previously introduced to these concepts in the seminar. These concepts do not restrict or exclude any discussion or impose a particular methodology on participants. Instead, they help participants to organize and improve insight into their own professional work and the approaches used by other people, in a truly interdisciplinary manner. They also facilitate a collective "meta" (high order) learning experience across cases and in discussions (Clark 1992, 1993).

Participants were asked to read "The Policy Process: A Practical Guide for Natural Resource Professionals" (Clark 2002: 173-189).

Modeled after Cherney and Vogel (2006), this workshop was set up as an alternative forum to the conventional classroom experience, which often involves discipline-based, bounded outlooks, and traditional professional conferences. Our workshop did not showcase scholarly work and examples as a completed product, or illustrate disciplinary theory as a way to frame problems and seek solutions. Instead the workshop sought cooperation and a shared commitment to resolving problems and skill building with basic foundational concepts. This mode of learning and skill building improved the insight of all participants into their own policy problems and the policy process generally (Chapter 9, this volume). Dismissive criticism, personal attacks, and one-upmanship were not permitted.

Instead, the workshop sought cooperation and a shared commitment to resolving problems and skill building with basic foundational concepts.

As noted by Cherney and Vogel (2006), the interdisciplinary problem solving approach used in the workshop rests on foundational principles:

- (1) the importance of people and their perspectives. People are encouraged to engage in self-orientation to make explicit the values and assumptions that bias every person;

- (2) an explicit normative stance in maximizing human dignity, the greatest possible participation in the shaping and sharing of policy outcomes, as the central goal of any social process;
- (3) the functional, applied value of knowledge as opposed to developing generalized causal relationships;
- (4) a stable frame of reference required to develop a coherent understanding of any problem;
- (5) focus on problems instead of preconceived solutions or methods;
- (6) emphasize practical insights into real-world problems and the invention and evaluation of alternatives to resolve those problems; this is in contrast to generalized theory development or methodological or disciplinary orthodoxy;
- (7) emphasize the unique context, the empirical reality, of every problem.

The intent is not to narrow the scope of inquiry, but to continually call attention to what is left out of our evolving understanding of any particular situation. This requires relying on a comprehensive and stable frame of reference.

The workshop began with a welcome by the conveners. They offered an overview of the workshop, a day-by-day agenda, and rules for interaction referred to as a “code of civility.” These included: (1) seeking understanding first and then seeking to be understood, (2) disagreeing in a manner that focuses on the issue at hand rather than the individual involved, (3) acting in a fashion that honors the sincerity of all who choose to speak out on an issue, (4) recognizing that we each have personal issues, but some issues are more important to the community as a whole than others, and (5) encouraging participation by all workshop attendees.

RESULTS

A description of each day’s goals, activities, rationale, results, discussion and conclusion follow. Additionally, more detail is provided for the methods used in the workshop.

Day 1: Mind mapping

The goal of Day 1 was to provide a structured opportunity for participants to clarify their own standpoint and perspective on what is required for successful large scale conservation. To do this, individuals undertook a facilitated exercise, mind mapping, with the intent of arriving at an agreed-upon formula for large scale conservation. Participants were given a felt pen and large sheet of paper. They were then given half an hour to draw a “mind map” or graphic representation of their conception of large scale conservation, including their own role or location in the process. They were encouraged to use concepts from readings and discussions and insights from guest

speakers (Appendix A, this volume). Following this individual exercise, the group reconvened and each participant was given time to explain his/her mind map to the rest of the group and to field questions from the other participants.

Mind mapping and foundational principles

A mind map is a picture illustration or diagram with images, words or lines and boxes that link together or arrange elements into a central idea (Pressley et al. 1998, Buzan 2000, Farrand et al. 2002). Mind maps are a way for people to represent or visualize their thinking or impressions about ideas, events or tasks. The way that the elements are arranged is often conventionally intuitive, according to the importance of the concepts. Elements are often grouped or connected in various ways. These represent what the author attends to, the main focus of attention, and the relation of elements to the whole. Mind maps are an aid in problem solving, decision making, and communication. Even for simple tasks, mind maps vary dramatically among people.

Mind mapping typically brings out participants' understanding of the context or social process within which people struggle to understand and solve the problem at hand. The workshop participants understood that the social process is the context in which all problems occur and all decisions are made. In any social process, *participants* with subjective *perspectives* interact in *situations* (or arenas) using *base values* (or resources) through various *strategies* to achieve valued *outcomes* that have *effects* in the broader social and decision contexts (Lasswell 1971). These terms or categories can call attention to important aspects of the social context that may have been overlooked. For example, many problem solvers fail to adequately address the role of individuals' perspectives, in part because of difficulties in rigorously studying subjective phenomena (Ascher and Hirschfelder-Ascher 2005). Some people fail to maintain contextual relevance because they neglect empirical outcomes and instead focus on other aspects of the social or decision processes to develop, for example, generalized strategic theories. Workshop participants' mind maps were compared against these standards (e.g., being factual, timely, open, fair) for complete social process understanding relative to standards for problem orientation and decision making (Clark 2002).

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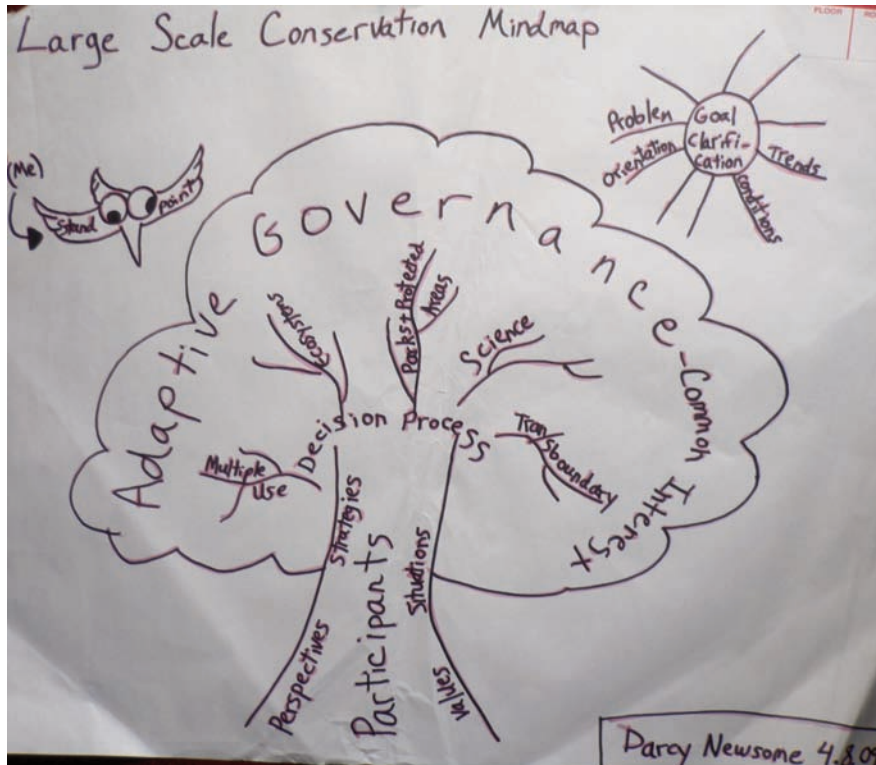
The maps

Results were rich and diverse, reflecting the wide range of perspectives on the ideal formula for large scale conservation and the experience, insight, and skills of participants. Several participants volunteered to explain their mind maps to the workshop, after which facilitators and the group decided that the emphasis should shift from finding a formula to making sure that all participants were included in presentations and discussion. Thus the goal shifted midstream from a knowledge and skill goal to an emphasis on inclusion, a respect and affection goal (Chapter 2, this

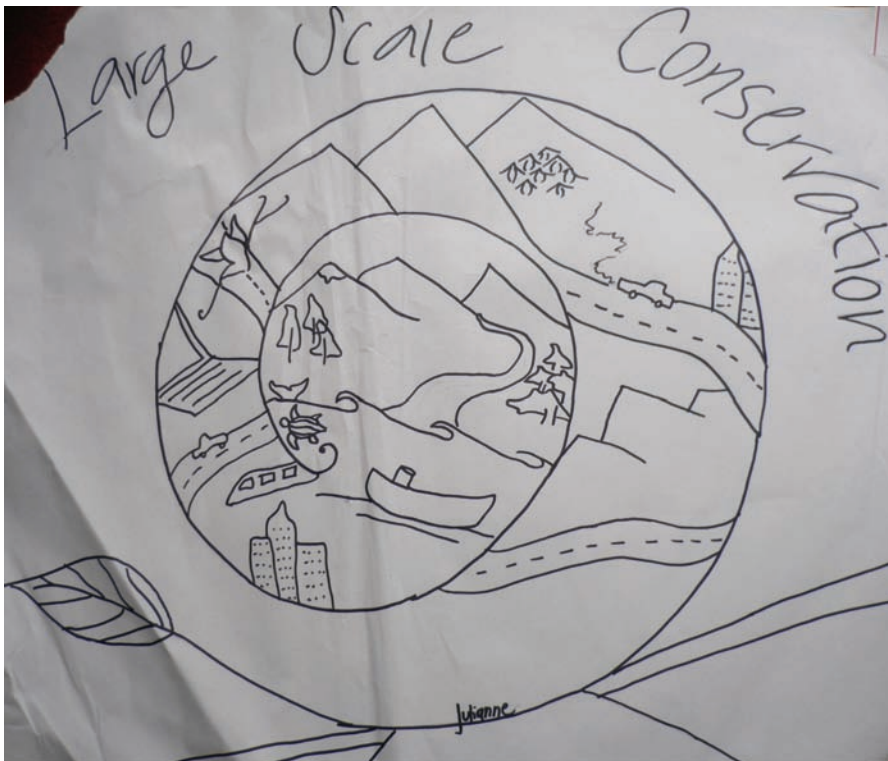
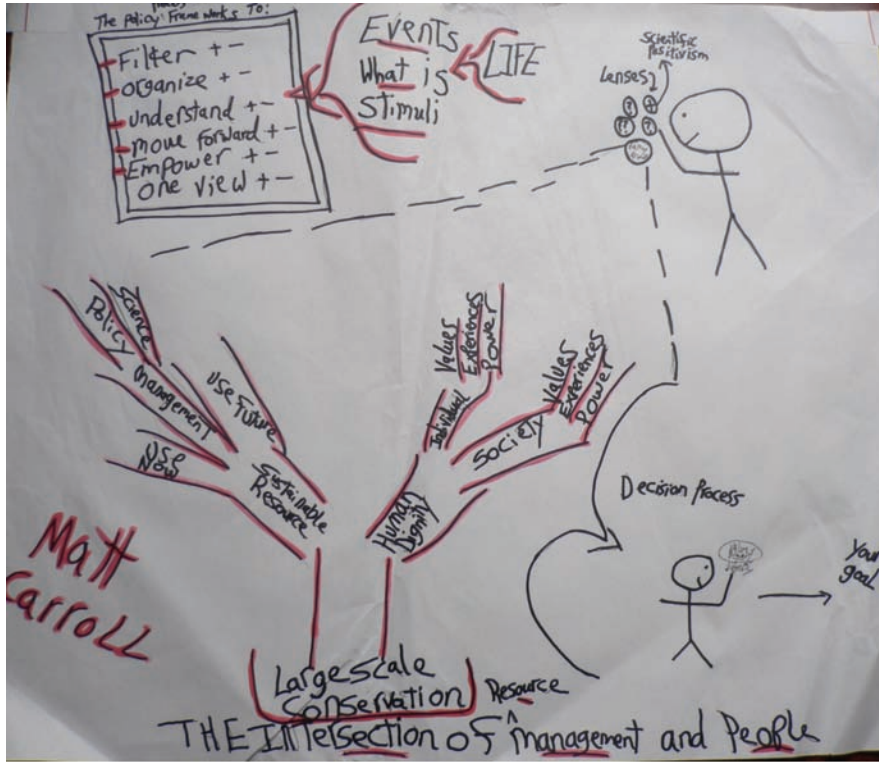
volume). This shift in goals reflected the sentiment of workshop facilitators and participants at the time. Many problem solving groups shift goals midstream, which amounts to “goal displacement or goal inversions” (Daft 1983). As a consequence of this shift in goals, facilitators gave each participant extended time to describe his/her mind map to the group. Much of the workshop’s first day, then, was devoted to these presentations of how individuals approached the concept of large scale conservation. Mind maps served as the concrete focus for these comparisons and discussions. Figure 1 shows three participant mind maps.

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Figure 1 Three representative mind maps from workshop participants. See text for explanation



Mind maps of some participants were entirely visual, incorporating few to no written words. One participant (Figure 1, bottom map) explained that she left out words and kept her drawings as abstract as possible because she wanted her work to be open to interpretation. She wanted it to allow moving “forward” in any specific case in as contextual of a manner as possible. She said that she did not feel that she



could capture large scale conservation in her mind map. Another participant (not included in Figure 1) relied on visual images as metaphors for the social and decision process, including a stream as the “progression” of potential policy solutions and boulders in the stream as filters to refine, re-direct, and/or entirely inhibit the progress of those solutions in implementation.

The content of participants’ mind maps reflected the subjective nature of the exercise. One diagram captured the social and decision processes as component parts of a large tree, in which participants made up the trunk and elements of the decision process made up the canopy (Figure 1, top map). A sun in the upper right hand corner represented the concepts of goal clarification and problem orientation, metaphorically shedding light on the social and decision processes depicted by the tree. This participant identified herself as a bird looking down on the tree from above, seeking to capture the notion that any participant can only see one part of a problem at a time.

The content of participants’ mind maps reflected the subjective nature of the exercise.

Another participant conceived of and drew large scale conservation as the intersection of research, resource management, and people (Figure 1, middle map). He saw that most ordinary participants in problem solving use the lenses of scientific positivism and other doctrines. This student, seeking to integrate a number of inputs in his mind map, included societal goals and individual values. The decision maker was drawn as a waiter “elevating” values and human dignity in order to move toward a previously identified goal. This mind map conveyed an understanding that problems are not principally about managing resources as things “out there,” but about managing the values and expectations of people. This map also demonstrated a focus on human dignity.

Still another mind map (not included in Figure 1) paid attention to all aspects of the interdisciplinary approach, but emphasized that interactions are not necessarily linear. Goal clarification and problem orientation, defined in terms of the common interest and the pursuit of human dignity, were drawn as smaller circles within successively larger circles of social and decision processes. Decision making in this mind map was not the end state of conservation but just one part, albeit an integral one, of a process that involves continuous re-evaluation and a back-and-forth examination of the social process. This participant’s formula for success showed an understanding that conservation is not simply about following a pre-defined set of positivistic or scientific management steps toward a goal, but instead involves feedback from diverse inputs all along the way toward successful problem solving.

Evaluation of the workshop process and content

A few participants incorporated most or all aspects of the social and decision processes elements and standards inherent to the seminar and articulated in the

background reading's cases and in guest speaker presentations. Most workshop participants did this implicitly and in a haphazard, incomplete way. Few participants, if any, were fully explicit about these elements and standards or used them to organize their mind maps. Most participants focused almost exclusively on just one process or component/element of the overall interdisciplinary approach (e.g., participants and their rectitude value outlook). These people typically relied on conventional, ordinary language and notions to represent and talk about their views. As a consequence, these mind maps were incomplete when compared against the interdisciplinary elements and standards talked about throughout the seminar. This shortfall perhaps reflects limited experience of participants in actual management efforts. It may also reflect the positivistic mindset from which many students of science and conservation have learned to operate, and how difficult it can be to shed that mindset.

For most participants, the workshop was the first time they had ever been asked to think comprehensively about conservation formulas (and supporting doctrines and symbols), their own standpoint, and problem solving skills. The concepts were new to some students in the beginning of the seminar and as a result they challenged these students' preexisting, more conventional perspectives, including identity, expectations, and demands (e.g., positivistic science was all that is needed for effective large scale conservation). A few participants grasped the problem solving approach and used it in their mind map and discussions, but most participants stayed rooted in their original perspectives derived from past educational and natural resource management experiences. Many participants also focused exclusively on social process elements of large scale conservation, failing to delve into the decision process or objectively reflect on their own standpoint. This situation illustrates how hard it is for many people to think fundamentally and practically about their own experience and standpoint relative to tasks like large scale conservation.

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Participants were diverse and this was evident in both the description of the mind maps as well as the mind maps themselves. Some people had years of experience in the U.S. and in other countries, sometimes under complex field situations. Others came directly from undergraduate programs and lacked "real world" experiences. As a consequence, some participants were quite familiar with conservation problems on-the-ground, whereas others were not. Additionally, some students had the benefit of diverse courses that they drew on in building and talking about their mind maps. Finally, some students – regardless of academic or professional background – were simply more open to reflecting and revising their personal views on large scale conservation paradigms and the policy sciences. The richness of perspectives, experiences, and value outlooks of workshop participants brought out through the

mind mapping served to stimulate discussion, some reflection, and perhaps revision. Participants learned from each other, perhaps most importantly discovering how differently each sees the world.

Time constraints precluded a thorough comparison and discussion of mind maps. If time had been available, the elements and standards of interdisciplinary problem solving could have been explored in some detail relative to the differing mind maps and the overall task of articulating a formula for large scale conservation. Even with time constraints, all participants were able to explain their mind maps to the group, and this affected the direction and outcome of the conversation. As the most vocal participants also tended to be those with significant real-world experience, it is certainly conceivable that a discussion emphasizing their standpoints could have been more focused and ultimately more productive. However, this would have excluded a large number of workshop participants at the outset, potentially affecting their willingness to participate throughout the rest of the workshop. The diversity of views expressed was wide, and learning how each participant approached the issue of large scale conservation helped frame an examination of problems and solutions and decision process on day two.

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Day 2: Problem orientation and decision process

The goal of Day 2 was to explore problems and solutions in large scale conservation. This required knowledge of how decision making actually takes place in cases and also about the recommended decision making activities and associated standards. Guest speakers and cases previously discussed in the seminar helped frame the background for Day 2.

Description of activities and rationale

Three student facilitators guided participants through exercises designed to identify problems inhibiting large scale conservation and find solutions. This was followed by two students' who carried out a problem oriented exercise on their own based on the lists of problems and solutions the group produced. They presented results at the beginning of the third day.

In order to ground participants in a real-world case, students, who had gone on a field trip to the Greater Yellowstone Ecosystem (GYE) over spring break, gave a presentation detailing their experiences and lessons learned from the trip. They began with background on GYE. They also clarified their standpoints as ten females from diverse backgrounds. They then moved on to discuss the participants involved in management of GYE with whom they had spoken. A wide range of doctrines for successful management of GYE's natural resources were apparent among these

managers, including government employees who promote scientific management to NGOs and independent actors who champion *adaptive governance* as the most sound solution to persistent policy conflict.

Following discussion of the GYE case, attention in the workshop turned to exploration of the decision process at the heart of large scale conservation. In an initial attempt at defining the problems in decision process, facilitators passed around sheets of paper and asked all participants to spend five minutes listing problems with large scale conservation. Once five minutes had passed, each participant passed his/her list to the participant to his/her right, who then added new or expanded items to the list. After repeating this process several times, participants passed the sheets to the facilitators for compilation and discussion.

With a list of problems in hand, the next task was to develop a list of solutions. Facilitators oversaw the same process to generate a list of solutions. Ultimately, the group's task was to utilize problem and solution lists to articulate a formula for successful large scale conservation.

Discussion

Workshop participants generated a list of problems with large scale conservation (Table 1). The list is quite conventional, clearly emphasizing that the existing formula for large scale conservation is not working, but not explicitly orienting to the problem through identification and analysis of goals, trends, and conditions.

Workshop participants generated a list of problems with large scale conservation (Table 1).

Table 1 The list of problems workshop participants saw with large scale conservation. No order implied.

Problems with large scale conservation
<ul style="list-style-type: none"> • Focus on ordinary problems: lack of goal clarification and problem orientation. • Government special interests: leaders in general have special interests; investment in the status quo. • Scientific uncertainty, biophysical. • Conservation discourse – lack of peoples' values and needs incorporated into large scale conservation; lack of incorporating local knowledge; lack of listening. • Need to build trust between different stakeholders and decision makers in conservation – lack of a framework for how to be truly participatory. • Lack of stakeholders to be able to clarify a common goal. • Lack of bridge-building between disciplines; lack of flow of ideas from top-down and bottom-up.

- Recognition of antiquated view of problems that, in reality, have no boundaries. Political boundaries are not ecosystem boundaries.
- Lack of effective leadership: respect-based, visionary leadership; people unwilling to let go of egos; lack of identifying strong leaders.
- Scientific management is an inadequate doctrine for large scale conservation.
- Large scale conservation ends up being more about integrating a bunch of small projects over large landscapes.
- Power hungry people.
- Distrust.
- Lack of a constitutive document for large scale conservation – and language for large scale conservation can be exclusive.
- Lack of funding and resources; budgets and funding that reward quantifiable results in the short-term.
- Many problems have long time scales but results are wanted in the short-term: desire for instant gratification, but also balancing people’s short-term needs with long-term goals.
- Lack of appraisal and termination of bad programs.
- Lack of process for defining goals.

Alternatives to the status quo, as conceived by workshop participants, are in Table 2. Workshop participants Emily Alcott and Abigail Adams undertook a problem oriented analysis of the list, noting that participants generally focused on problems related to social and decision processes.

Table 2 The list of solutions workshop participants saw with large scale conservation. No order implied.

Alternatives to improve large scale conservation
<ul style="list-style-type: none"> • Clarify goals and be flexible to change. • A need to identify successful, practice-based approaches, reward them, disseminate, and scale up; do not assume bigger is always better. • Incorporate local knowledge in an effective and genuine discourse. • Create indices that measure progress towards achieving the common interest; terminate programs that aren’t progressing towards that goal. • Find, support, and reward leaders who are connectors, exhibit problem oriented skills and knowledge, and have conducive open personality types.

Students categorized alternatives into conventional terms, and could be categorized in terms of people, perspectives, situation, values at stake, outcomes sought, and long-term effects. Social process problems were particularly apparent; for example, many of the submitted alternatives revolved around a perception that decisions are being made by people who seek wealth and power (chapter 2, this volume). Generally, it seems that a blending of value outcomes is not in place. Affecting change begins with addressing these kinds of fundamental value issues within the social and decision processes.

Evaluation

The listing exercise fell short of participants' expectations. These students were looking for more insight and practice in using problem orientation. During the workshop participants were eager to articulate the many problems they had observed in cases throughout the semester, but in the process did not describe the underlying context, trends or conditions behind problems. This is a common pitfall in analysis and discussions, as quick identification of problems can often lead seamlessly into an associated list of solutions. Critically, failing to take into consideration the basis of problems in social and decision process terms can lead to solutions that do not address root causes, thus failing ultimately to solve that problem. Our recommendations address this issue below. Unfortunately, day two's discussion of the decision process fell into this trap. Additionally, in some cases statements identified as "problems" might have been more correctly categorized as "trends and conditions." For example, a trend in biodiversity decline is not a problem unless first a goal has been set declaring that biodiversity is to be conserved. A "problem", then, should be conceived of as the difference between a goal or desired state of affairs and trends and conditions.

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As in other parts of the workshop, participants were hampered by a lack of time, which prevented in-depth discussion of problems and solutions. Nevertheless, facilitators oversaw a dialogue that touched on many of the most widespread and persistent problems. Moreover, participants were able to move beyond simply describing problems, and begin to articulate potentially lasting solutions. Following a semester of coursework that covered management approaches to conservation, some of which seemed intractable, much of the value in this particular exercise lay in putting a significant amount of collective thought into the bigger picture—what does it all mean? What are the problems that have come up over and over again, with different people and in different contexts, and how do they inhibit progress toward solutions that protect ecosystems and support human communities as well, ultimately promoting human dignity?

Day 3: Leadership

Day 3 was devoted to an overview of leadership concepts, the examination of participants' perspectives on leadership, and relations of those perspectives to other facets of personality. Goals were: (1) to familiarize participants with conventional leadership frames premised on power and position, (2) introduce a relational paradigm of leadership better suited to large scale conservation, and (3) foster participants' clarification of their own leadership standpoint by elucidating their varied perspectives on "good" leadership and relations between those perspectives and their value orientations and personality traits.

Leadership and foundational principles

Leadership is unequivocally important to successful large scale conservation. Large scale conservation characteristically exhibits high levels of complexity and novelty that in turn require the efforts of people who are able and willing to integrate, innovate, and take risks as a basis for orienting themselves and others to productive courses of action. Because imposed top-down solutions are typically not durable (Acheson 2006, Berkes 2007), the group concluded that leadership in large scale conservation is often better exercised based on persuasive engagement and grounded in respectful relations (see Yukl 1994, Mumford et al. 2000, Zaccaro 2001, Hogan and Kaiser 2005).

Leadership is unequivocally important to successful large scale conservation.

Workshop participants were introduced to a paradigm of situated, relational leadership focused on relationships devoted to the promulgation of social order based on persuasion, civility, self-direction, positive affect, and the related prioritization of respect, inclusive rectitude, enlightenment, and affection. This concept of leadership and its related goals is rooted in the seminal work of Harold Lasswell (Ascher and Hirschfelder-Ascher 2005) and Herbert Kelman (Kelman 2006), and is well suited to the demands of large scale conservation. Situated and dignity-oriented leadership requires on-going and effective standpoint clarification among putative "leaders," and attaches great importance to perspectives of the "led," including their expectations of leaders and their notions of "good" leadership.

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Description of activities

Day 3's activities centered on examining the perspectives of workshop participants regarding "good" leadership, and the roots of these perspectives in participant value

orientations and personality traits. These activities were designed to foster standpoint clarification as well as an increased appreciation for the considerable differences in peoples' perspectives on leadership, the roots of these differences in personality, and, ultimately, the importance of understanding this facet of context to effective professional practice.

We used Q-analysis (Brown 1980) to clarify participants' perspectives on leadership. Participants sorted 44 statements about elements of "good" leadership according to their reckonings of importance. The statements were obtained from surveys of students in three earlier classes with a related topical focus. Participant rankings were statistically analyzed to derive factors representing different more-or-less coherent perspectives. We interpreted these factors as "perspectives" based on the numeric loadings of different statements. Participants were identified with each perspective based on similar numeric scores. We regressed participant scores for each factor against their numerically scored value orientations and personality traits. Participants subjectively scored their own value orientations using a Likert scale and according to two different value schematics (Lasswell and Holmberg 1992, Schwartz 1994). Personality traits were scored according to online versions of the Myers-Briggs Type Indicator (MBTI) and NEO-PI Five Factor Model (Big-5, see Rentfrow et al. 2008).

Leadership and personality results

The results of our workshop activities were complex. Participants consistently scored themselves highest on orientations towards respect and well-being, which are the values most strongly identified with human dignity. Despite common patterns, value orientations differed among participants along four gradients defined by degrees of orientation toward self-transcendence, self-enhancement, conservatism, and openness. Self-transcendence was positively related to the personality traits of Agreeableness and Feeling. The combination of self-enhancement and conservatism was positively related to Concreteness and Extraversion (see Rentfrow et al. 2008). And, the combination of self-enhancement and openness was positively related to Extraversion, Agreeableness, and Abstractness, and negatively related to Neuroticism. Overall, workshop participants were less Neurotic and more Agreeable, Open, and Conscientious than the general population, and exhibited a predominantly rational and moderate orientation toward risk.

The structure of participant perspectives on "good" leadership was multi-faceted but interpretable in terms of defining statements and underlying personality. We defined three "families" of perspectives comprised of eight factors. The "surgent" perspective looked for leaders that were inspirational and self-confident and attached little importance to the ability of leaders to clarify their standpoint or locate themselves in social and decision making processes. This perspective was positively related to participant traits of Toughmindedness and Neuroticism and self-scored orientations toward the values of benevolence and hedonism. The "open and facilitating" perspective looked for leaders who were able to listen and learn, solve problems, balance process and goals, and maintain others' focus, and attached little value to leader self-confidence or charisma. This perspective was positively related to

Feeling and Conscientiousness, and negatively related to Agreeableness and the value of universalism. The “communicative” perspective looked for leaders who communicated well, fostered connections, and were able to listen and learn, and attached little importance to vision, passion, or leader “mapping” skills of any sort. This perspective was positively related to Agreeableness and Spontaneousness. This exercise examined personality in leadership and clarified the attributes of successful leadership, which are context specific.

Discussion and conclusion

Aside from some aspects of mind mapping, this day’s activities engaged workshop participants at the most personal level. Depending on the individual, this level of engagement seemed to engender varying degrees of both attraction and discomfort. Standpoint clarification, which was a large part of Day 3’s focus, is the most difficult of tasks to attend to (Clark 2001, 2002). It requires confronting some aspects of self that may be uncomfortable, which is also the genesis of personal growth and evolution, as well as a key to enhanced sensitivity to situational contexts. Most people are, for obvious reasons, fascinated by themselves. Translating this “self interest” into improved leadership and professional practice depends on many factors (some noted above), including access to conceptual tools (e.g., problem orientation, goal clarification, standpoint analysis) that offer cogent insights. This day’s activities offered participants a coherent and comparative view of their perspectives on leadership, which intersects with many issues central to human affairs, as well as insight into their values, personality, and relations of these factors to how they see and orient to the world. All these factors affect how effective an individual will be in a career (see Mattson et al. In Review a,b) The key to success, the workshop concluded, is for professionals to be attuned to their operating environment, facile at its diagnosis, and adaptive in their behavior.

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EVALUATION

Participant evaluations of the workshop are useful in gauging the utility of such workshops to participants, and in suggesting potential alterations to the focus and agenda of workshops in the future. Anonymous responses to a set of pre-defined and tested questions ensure that participant feedback is as candid as possible, and useful to facilitators in improving workshop design. Evaluation from facilitators, similarly, provides a useful benchmark for assessing the success of a given workshop relative to others that the facilitator has overseen in the past.

On the last day of the workshop, evaluation forms were distributed to participants. Feedback was requested via responses to seven questions, as noted below. About 50

percent of workshop participants returned their evaluations; follow-up with those who had not responded was difficult in part because: (1) evaluations were conducted anonymously and (2) many participants left campus for summer internships and/or full-time jobs soon after the workshop ended. Despite these complications, the response rate achieved yielded a number of insights for potential application in future workshops.

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The first question asked to participants was: *Was the approach we took in the workshop new to you and was it helpful?* For the most part, participants indicated that the approach was indeed a new one, and useful as a framework for trying to make sense of cases in large scale conservation. A smaller subset of respondents noted disappointment that important points were sometimes glossed over in the interest of time, and that differing levels of engagement among participants inhibited elevation of dialogue to a higher level. For example:

I wish we had more time as I think several important points were glossed over and we were unable to get into deeper analysis and critique of our peers' responses.

The second question asked of participants was: *What are the three take-home lessons of this workshop?* Broadly, many responses to this question addressed the importance of context in large scale conservation; a single formula is simply not possible to develop and apply in all cases, and the differing ways in which people conceive of and attempt to solve problems must be respected and attended to when developing formulas for specific cases. Many participants also felt that the workshop demonstrated the centrality of *people* in issues of large scale conservation, and that working toward adaptive governance as an overarching management framework should be the main goal of conservation efforts.

The third question for participants was: *How will you use this experience?* A number of respondents indicated that they are already using a multidisciplinary framework to inform analyses of material in other courses, and that they expect to further utilize the interdisciplinary framework examined in the course as conservation leaders and professionals in the future. For example:

I now can read materials, listen to news, presentations, speakers etc with a more attuned ear, pinpointing elements from the policy process and adaptive governance, and using them to evaluate the degree of effectiveness of leaders, organizations and colleagues at addressing and resolving problems. I hope to continue to hone these skills and implement them as a better leader in the future.

The fourth question requested that participants note: *What design and content improvements would be helpful for similar workshops?* A majority of responses noted

the workshop's major shortcoming as simply a lack of time in which to really engage the issues under consideration. The approximately nine hours spent in the workshop—in three blocks, of three hours apiece, spread over three weeks—to many participants was not enough to dig into problems of large scale conservation in a meaningful way. Similarly, a number of participants felt that, given the limited amount of time allotted to the workshop, the focus on large scale conservation in general was too broad and that the workshop would have been more effective if focused on a specific case, or several specific cases. For example:

The workshop would be improved if the focus were more concrete and specifically focused on a particular natural resource or conservation issue.

The fifth question asked to participants was: *What do you think would be a constructive next step to address issues and problems highlighted in this workshop? And who should be involved?* Some students responded that producing a document either individually or as a group, addressing outcomes of the workshop and lessons learned, would be a useful means of applying the workshop to real world issues of large scale conservation. Several others noted that before moving forward any further, input from a wider range of stakeholders involved in large scale conservation would be desirable. To one participant, the best use of lessons learned is to enter the professional world and put these concepts into practice.

The sixth question asked to participants was: *Would you recommend this or similar workshops to other people? Who? To cover what natural resource topics?* Nearly all participants responded that such workshops would be of great value to professionals involved in large scale natural resource management, with one student even suggesting that such workshops should be mandatory for conservation professionals. Participants saw that the workshop was applicable to many areas outside of large scale conservation, including disaster risk reduction and international development.

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The seventh and final question asked to participants was: *How have you used (or can you see yourself using) concepts, information, or contacts acquired in this workshop in your work?* One participant responded that he/she had already used the policy sciences framework to inform the design of an upcoming summer research project, whereas others plan to rely on the concepts of common interest, adaptive governance, and others in future professional careers.

RECOMMENDATIONS

The first recommendation is that the productivity of future workshops could be significantly enhanced if all participants simply had more experience: with on-the-

ground conservation in particular, and with life outside of academia in general. In a workshop specifically intended to improve the practice of large scale conservation “out there,” better grounding in life experience could ease the conceptual leap from background theory—relied on throughout the workshop—to the real world, where practitioners must translate that knowledge into more effective programs and practices. Participants in this workshop with less life experience certainly were not at fault for this; rather, it was simply a reflection of the stage they were at in their academic and professional careers. For these students and indeed all workshop participants, greater facility with analytic tools, such as mind mapping and problem orientation, could likely have contributed to an overall higher level conversation on concepts and tools, and how to apply them to real-world experience.

Second, as noted in a number of student evaluations, participants needed more guided examination of actual cases rather than, or in addition to, a high-level overview of large scale conservation. A detailed examination of one or more specific cases could have eased the transition from theory to practice, illuminating elements of doctrine and formula and leading to the development of foresight about ordinary, governance, and constitutive problems and solutions on-the-ground. Students had considered case material throughout the semester, but could have benefitted from a closer examination of this material in context of a focused workshop. Particularly for students with minimal experience outside the classroom, case studies can help with the comprehension of otherwise abstract concepts and provide standards against which other cases can be judged. This recommendation seems especially applicable for workshops that are somewhat limited by time constraints, as this one was.

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A corollary to this recommendation, in the context of this workshop being held as part of a larger seminar for graduate students in environmental management, is that participants would have benefited from having taken one or several other courses in the policy sciences before participating in an in-depth workshop. “Species and Ecosystem Conservation: An Interdisciplinary Approach” and “Foundations of Natural Resources Policy and Management” are two courses offered at the Yale School of Forestry & Environmental Studies that could have provided students with a better grounding in interdisciplinary concepts and their application to conservation in practice. To foster a more productive dialogue, future workshops may require participants to have taken one or more foundational courses.

Third, in general, workshop participants need to think more rigorously about foundational concepts of leadership and practice-oriented skills. Much discussion failed to move very far beyond conventional descriptions of problems with the large scale conservation paradigm, and potential solutions to those problems. More active

engagement with background material for the course in general and the workshop specifically, along with participants who had taken one or more foundational courses in interdisciplinarity, could have improved the dialogue and outcomes throughout the workshop.

CONCLUSION

The three-session workshop provided participants with practical concepts and skills about problem solving in conservation. Participants did conclude that the current formula (i.e., scientific management) is not working well. As a solution, workshop participants noted that the formula most likely able to affect the kind of constructive change that is sought in large scale conservation is that of *adaptive governance*, as described by Brunner et al. (2005) and Clark (2008). *Adaptive governance* explicitly recognizes that all conservation problems rest within a specific context, and seeks to integrate scientific and other types of knowledge into policies to advance the common interest through open decision making structures. This approach pays close attention to the social process and ultimately arrives at outcomes that seek to advance human dignity and sustainability. Ultimately, reform of conservation practices is possible by changing knowledge/skill interactions in the decision making process, the people involved, the structures used, and the arena/environment in which people interact. In the end, adaptive governance as the preferred formula seeks to advance human dignity and sustainability, which workshop participants supported as the overriding goal for large scale conservation.

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LITERATURE CITED

- Acheson, J. M. 2006. Institutional failure in resource management. *Annual Review of Anthropology* 35: 117-134.
- Ascher, W., and B. Hirschfelder-Ascher. 2005. *Revitalizing political psychology: the legacy of Harold D. Lasswell*. Mahwah, NJ: Lawrence Erlbaum.
- Berkes, F. 2007. Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences* 104: 15188-15193.
- Brown, S. R. 1980. *Political subjectivity: applications of Q methodology in political science*. New Haven, CT: Yale University Press.
- Brunner, R. D., T. A. Steelman, L.C. Coe-Juell, M. Cromley, C. M. Edwards, and D. W. Tucker. 2005. *Adaptive Governance: Integrating Policy, Science, and Decision Making*. New York City, NY: Columbia University Press.
- Buzan, T. 2000. *The Mind Map Book*. New York City, NY: Penguin Books.
- Cherney, D. N., and J. Vogel. 2006. Policy sciences workshop primer. Boulder, CO: University of Colorado, 5 pp.
- Clark, D. A., M. Tyrrell, M. Dowsley, L. Foote, M. R. Freeman, and S. G. Clark. 2009. Polar bears, climate change, and human dignity: Seeking integrative conservation policies. Pp. 233-242 in *Inuit Polar Bears and Sustainable Use*, eds. M.M.R. Freeman and L. Foote. Edmonton, AB: CCI Press.
- Clark, S. G. 2008. *Ensuring Greater Yellowstone's Future: Choices for Leaders and Citizens*. New Haven, CT: Yale University Press.
- Clark, T. W. 1992. Practicing natural resource management with a policy orientation. *Environmental Management* 16: 423-433.
- Clark, T. W. 1993. Creating and using knowledge for species and ecosystem conservation: Science, organization, and policy. *Perspectives in Biology and Medicine* 36: 497-525.
- Clark, T. W. 2001. Developing policy-oriented curricula for conservation biology: Professional and leadership education in the public interest. *Conservation Biology* 15(1): 31-39.
- Clark, T. W. 2002. *The Policy Process: A Practical Guide for Natural Resource Professionals*. New Haven, CT: Yale University Press.
- Clark, T. W., G. N. Backhouse, and R. C. Lacy. 1990. Report on a workshop on population viability assessment as a tool for threatened species management and conservation. *Australian Zoologist* 27: 28-35.
- Clark, T. W., R. J. Begg, and K. W. Lowe. 2002. Interdisciplinary, problem-solving workshops for natural resource professionals. Pp. 173-189 in *The Policy Process: A Practical Guide for Natural Resource Professionals*, T.W. Clark. New Haven, CT: Yale University Press.

- Daft, R. L. 1983. *Organization Theory and Design*. Saint Paul, MN: West Publishing.
- Farrand, P., F. Hussain, and E. Hennessy. 2002. The efficacy of the mind map study technique. *Medical Education* 36(5): 426-431.
- Hogan, R., and R. B. Kaiser. 2005. What we know about leadership. *Review of General Psychology* 9: 169-180.
- Kelman, H. C. 2006. Interests, relationships, identities: three central issues for individuals and groups to negotiating their environment. *Annual Review of Psychology* 57: 1-16.
- Lasswell, H. D. 1971. *A Pre-View of the Policy Sciences*. New York City, NY: American Elsevier.
- Lasswell, H. D., and A. R. Holmberg. 1992. Toward a general theory of directed value accumulation and institutional development. Pages 1379-1417 in *Jurisprudence for a free society: Studies in law, science, and politics*, eds. H. D. Lasswell and M. S. McDougal. New Haven, CT: New Haven Press.
- Mattson, D. J., S. G. Clark, K. Bryd, S. R. Brown, and B. Robinson. In Review a. Leadership in large-scale conservation: Leaders' perspectives in the Yellowstone-to-Yukon conservation initiative. *Policy Sciences*.
- Mattson, D. J., and S. G. Clark. In Review b. Human dignity in concept and practice: A perspective on effective policy. *Policy Sciences*.
- Mumford, M. D., S. J. Zaccaro, M.S. Connelly, and M. A. Marks. 2000. Leadership skills: conclusions and future directions. *Leadership Quarterly* 11: 155-170.
- Pressley, M. S., L. VanEtten, Y. G. Freebern and P. VanMeter. 1998. The metacognition of college studentship: A grounded theory approach. Pp. 347-367 in *Metacognition in Theory and Practice*, eds. D.J. Hacker, J. Dunosy, and A. C. Graeser. Mahwah, NJ: Erlbaum Publishers.
- Rentfrow, P. J., S. D. Gosling, and J. Potter. 2008. A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics. *Perspectives on Psychological Science* 3(5): 339-369.
- Rutherford, M. B., M. L. Gibeau, S. G. Clark, and E. C. Chamberlain. 2009. Interdisciplinary problem solving workshops for grizzly bear conservation in Banff National Park, Canada. *Policy Sciences* 42: 163-188.
- Schwartz, S. H. 1994. Are there universal aspects in the structure and content of human values? *Journal of Social Issues* 50: 19-45.
- Yukl, G. 1994. *Leadership in Organizations*. Third edition. Mahwah, NJ: Prentice-Hall.
- Zaccaro, S. J. 2007. Trait-based perspectives of leadership. *American Psychologist* 62: 6-16.