

Implementing Ecosystem Management in the Bureau of Land Management: An Organizational Perspective



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INTRODUCTION

Ecosystem management, a paradigm for managing natural resources and the environment, gained popularity in the early 1990s due to changes in scientific knowledge, social values, and political support. While scientists and scholars had been advocating the use of ecosystem-based management approaches for decades, a policy window opened with the Clinton Administration’s push for this new approach. Support for ecosystem management became so widespread that by the mid-1990s, 18 federal agencies – including the Bureau of Land Management (BLM) -- had officially adopted it.

When ecosystem management first emerged on the scene, it was criticized as a “fuzzy” concept that was impossible to implement due to lack of agreement on a precise definition. However, amid the confusion about the meaning of ecosystem management, consensus began to develop. One of the most commonly used definitions of ecosystem management comes from Grumbine (1994): “scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term” (p. 31). In addition, Grumbine proceeded to describe ten dominant themes of ecosystem management: hierarchical context, ecological boundaries, ecological integrity, data collection, monitoring, adaptive management, interagency cooperation, organizational change, humans embedded in nature, and human values (see Table 1).

Table 1: Grumbine’s (1994) ten dominant themes of ecosystem management.

Ecosystem Management Theme	Definition
1. Hierarchical Context	Taking a “systems” perspective: dealing with and understanding problems at all levels (i.e. genes, species, populations, ecosystems, landscapes)
2. Ecological Boundaries	Working across administrative/political boundaries
3. Ecological Integrity	Protecting native diversity and the ecological patterns and processes that maintain that diversity
4. Data Collection	More research and data collection (i.e. scientific, economic, social) and better use of that data
5. Monitoring	Tracking the results of management actions with the intention of learning
6. Adaptive Management	Experimenting with different management techniques and treating management as a continuous learning process
7. Interagency Cooperation	Working cooperatively with stakeholders and other government entities, including collaborating with citizens



8. Organizational Change	Changing organizational structures to facilitate ecosystem management implementation
9. Humans Embedded in Nature	Recognizing that humans are a component of the ecosystem and should be treated as such
10. Values	Recognizing that human values will always play a dominant role in resource management

Within the past few years, some scholars have argued that the use of an ecosystem management paradigm in natural resources management has declined (Haeuber 1998; Bowersox 2004). However, components of the paradigm persist. For example, under the current Bush Administration, the BLM’s guiding management paradigm is entitled the 4 C’s, which seeks to “conserve” public lands through “cooperation,” “communication,” and “consultation.” In essence, it promotes the idea of citizen stewardship – a concept promoted also by ecosystem management (US DOI BLM 2003b). Moreover, adaptive management remains a high priority for many natural resource agencies. Recently, the Department of Interior modified its National Environmental Policy Act (NEPA) procedures to facilitate the use of adaptive management (US DOI 2004). After more than ten years of ecosystem management component implementation by natural resource agencies, the question remains, how well are these agencies doing?

Studies of ecosystem management’s implementation in the U.S.D.A. Forest Service and the U.S. Fish and Wildlife Service have been conducted (Butler & Koontz 2005; Danter et al. 2000). However, little is known about the implementation of ecosystem management in the Bureau of Land Management. As the largest federal public land manager, the BLM is an important and under-studied organization. The BLM manages 262 million surface acres for multiple uses (mostly in the 12 western states) and 300 million subsurface acres for mineral resources (US DOI BLM 2004). Consequently, understanding how well ecosystem management is being implemented on BLM lands would mean understanding how well ecosystem management is being implemented on 1/8 of the surface acreage in the United States.

The first goal of this study was to gain an organizational perspective of the BLM. Data were collected to analyze the degree to which the agency exhibits the structural, cultural, leadership, and political characteristics thought to facilitate implementation efforts. The second goal of this study was to examine the extent to which the BLM employees perceive their agency has implemented various ecosystem management components. Finally, the third goal of this study was to better understand the factors that have facilitated and impeded ecosystem management implementation efforts in this organization.

Prior Studies of Ecosystem Management Implementation

Scholars of ecosystem management have identified a number of factors likely to impact its successful implementation. While lack of scientific information has been highlighted by some,



others argue that the primary barriers are institutional and social. This study focused on the latter, emphasizing the structural, cultural, leadership, and political characteristics hypothesized to impact ecosystem management’s implementation (see Table 2).

Table 2: Factors expected to facilitate ecosystem management implementation.

Factor	Value Expected to Facilitate Ecosystem Management
Structural Factors	
1. Centralization	decentralized
2. Formalization	less formalized
3. Employee Transfer	infrequent
4a. Communication Frequency	frequent
4b. Communication Method	face-to-face
4c. Communication Flow	two-way
5. Budget Structure/Flexibility	more flexible
Cultural Factors	
6. Power Sharing	willing to share power
7. Innovation and Experimentation	willing to innovate and experiment
8a. Temporal Focus	simultaneous consideration of present and future generations
8b. Environmental Focus	simultaneous consideration of the preservation of ecological integrity and goods/services production to meet human needs
8c. Resource Focus	approximately equal emphasis given to commodity and non-commodity resources
9. Leadership	visionary leaders who are good at obtaining necessary support and motivating others
Political Factors	
10. Support for Ecosystem Management	high support from a variety of influential political actors
11. Funding for Ecosystem Management	adequate funding
12. Accountability	held accountable for implementing ecosystem management



Structural Factors


Structural factors include centralization, formalization, employee transfer, communication, and budget flexibility. Centralization describes the distribution of power within an organization. When decision-making authority is concentrated in relatively few hands and decisions are made hierarchically, the organization is said to be highly centralized (Hage & Aiken 1970; Hall 2002; Van de Ven & Ferry 1980). Ecosystem management scholars argue that decentralized, bottom-up organizations and management styles are more amenable to ecosystem management because they facilitate power delegation and sharing among stakeholders, citizens, bureaucrats throughout the organization, and administrators across jurisdictional boundaries (Cortner & Moote 1999; Danter et al. 2000; Meidinger 1997; Steele & Weber 2001).

Formalization, the second dimension of organizational structure, refers to “the rules and procedures designed to handle contingencies faced by the organization” (Hall 2002). Organizations with many rules which significantly constrain and regulate individual action are said to be highly formalized (Hage & Aiken 1970; Hall 2002). Ecosystem management scholars argue that ecosystem management can only be implemented effectively through less formal organizations because the structure allows employees to work more closely with the concerned public and to more easily adapt to changing environmental conditions (Cortner & Moote 1999; Danter et al. 2000; Meidinger 1997).

Another important structural factor thought to impact an organization’s successful implementation of ecosystem management is frequency of employee transfers within an agency. According to scholars, collaboration (a component of ecosystem management) requires a foundation of trust and knowledge among participating parties in order to be successful (Wondolleck & Yaffee 2000; Yaffee et al. 1996). When agency employees are transferred frequently from one location to another, it is difficult for the agency to build this foundation of trust between employees and stakeholders.

Communication is another significant structural factor that can influence ecosystem management implementation. Implementation is facilitated when supervisors and subordinates communicate frequently. Furthermore, it is important that employees regularly communicate with professionals from different disciplines. Finally, scholars argue that the flow of information should be two-way, rather than one-way, and that communication should be largely face-to-face (Danter et al. 2000; Grumbine 1997; IEMTF 1995; Westley 1995). Specifically, scholars of ecosystem management argue that face-to-face communication is superior to other forms of communication because it allows for immediate follow-up and provides additional communicative signals in the form of body language and voice intonation. Communication should also flow both up and down the organization (two-way vs. one-way) to prevent the loss of vital information (IEMTF 1995; Westley 1995).

The final structural factor examined in this study is budget flexibility. According to scholars, the U.S. federal budget structure is often not amenable to ecosystem management




implementation because it forces agencies to compete rather than cooperate through its allocation of a limited number of financial resources to specific agencies (IEMTF 1995). The short-term focus prevalent in most budgeting processes is also problematic. Ecosystem management projects require long-term planning and long-term financial commitments (Stein & Gelburd 1998). Another potential problem with the current budget allocation structure is that it makes it difficult to obtain funding for ecosystem management programs and projects. Funding is often allocated to specific programs or on a line-item basis. Ecosystem management projects often cut across administrative and line item boundaries, making them extremely difficult to fund. Additionally, to make their accomplishments apparent to their constituents, Congress often prefers to fund projects that will yield immediate results. Consequently, Congress is less likely to fund monitoring and evaluation efforts. Monitoring and evaluation are key aspects of adaptive management (a theme of ecosystem management). Without money for proper monitoring efforts, gaps in knowledge go unfilled and ecosystem management may fail (Yaffee et al. 1996).

Cultural Factors

Beyond structural factors, several organizational culture factors may be important, including willingness to share decision-making power; willingness to innovate and experiment; and attitudes and beliefs about resource use and the environment. First, the willingness to share power with stakeholders and other government organizations has been found to impact ecosystem management implementation efforts. Previous studies indicate that government agencies have traditionally been unwilling to share power with their stakeholders or other government agencies (Cortner & Moote 1999; Holling & Meffe 1996; Steele & Weber 2001; Westley 1995). In fact, government agencies typically compete with other government agencies to obtain power, funding, or other resources. This competitive behavior is a substantial impediment to ecosystem management implementation, which requires collaboration and management across administrative boundaries (Grumbine 1994).

The second cultural factor is the willingness to innovate and experiment. Bureaucratic culture has a tendency to be inflexible and to resist new information. This resistance to change and innovation can make the implementation of ecosystem management, which requires flexible and adaptive institutions, difficult. Fear of failure and intolerance for “bad news” can prevent an organization from tackling problems in an innovative fashion (Cortner & Moote 1999; Holling & Meffe 1996; Knight & Meffe 1997; Yaffee 1997).

The third key cultural factor is the set of attitudes and beliefs about resource use and the environment held by members of an organization (Schlager & Freimund 1994; Yaffee 1996; Yaffee 1997). Previous research has found that government resource management agencies often favor benefiting present generations over future ones, and commodity production over ecological preservation (Schlager & Freimund 1994). While ecosystem management does not require an exclusive focus on future generations, it does point to the importance of realizing that humans are a part of the ecosystem, and that human needs mirror ecosystem needs.



Moreover, ecosystem management suggests commodity production is appropriate only within the constraints of preservation of ecological integrity. Consequently, balancing resource use and environmental protection is critical for successful ecosystem management (Cortner & Moote 1999; Grumbine 1994).

Leadership

Previous studies have found leadership to be essential when changing or transforming an organization (Nutt & Backoff 1993). Leaders are believed to be especially important in cases where an organization is expected to implement policies that run counter to traditional agency culture – as has been the case with ecosystem management implementation in a number of organizations (Slocombe 1998, Rigg 2001, Danter et al. 2000).

Political Factors

Several political factors have been found to affect ecosystem management implementation, including political support, funding, and accountability. First, success often requires support from political leaders and the public. Changes in political power, focusing events, and public attention can either open or close “windows of opportunity” for particular policies (Haeuber 1998). Consequently, successful implementation of ecosystem management hinges, at least partially, on having political support.

In addition to political and public support, ecosystem management needs funding for implementation. For federal natural resource agencies, this means Congress and the President must be willing to fund ecosystem management initiatives. Lack of funding has proven to be a significant barrier to many ecosystem management efforts (Yaffee et al. 1996).

Accountability is another political factor likely to impact ecosystem management implementation. The first challenge is putting in place performance measures that adequately measure an agency’s ability to meet ecosystem management goals. Accountability to those goals is then enforced through incentives for performing various tasks and behaving in a certain manner. Without proper incentives, employees of implementing agencies are not as inclined to adhere to ecosystem management goals. Furthermore, incentives to achieve goals that run counter to the ecosystem management paradigm might exist within an agency (IEMTF 1995).

Understanding the political factors, leadership, cultural factors, and structural factors described above can help us to explain whether the BLM has the characteristics thought to facilitate successful implementation of ecosystem management.

RESEARCH METHODS

Data for this study came from a mailed questionnaire asking BLM employees about their agency’s organizational characteristics and ecosystem management implementation. The



questionnaire was developed and distributed to BLM employees nationwide in October 2004. These employees included all principal line officials at each State, District, and Field/Resource Area Office, as well as a stratified random sample of BLM staff specialists (two were randomly selected from each State, District and Field Office).

Questionnaires were received from 8 State Directors, 63 Field Office Managers and 198 staff specialists, for a total response rate of 59% (267 questionnaires). Questionnaire respondents were asked to answer a variety of questions about the degree to which the BLM exhibits characteristics thought to facilitate ecosystem management, the level of implementation of different ecosystem management components, and factors that have facilitated or impeded implementation of ecosystem management.

RESULTS

Goal 1: Presence of Factors Thought to Foster Ecosystem Management Implementation

The survey questionnaire generated a wealth of data to measure BLM employee perceptions of the structural, cultural, leadership, and political characteristics hypothesized to facilitate ecosystem management's implementation. As described below, the responses of BLM employees indicate the presence of many of these factors.

Centralization


Respondents were presented with two dichotomous statements. The first statement read that the agency (the BLM) "emphasizes centralization, or placing the greatest authority and responsibility at the state or national level." The second statement read that the agency "emphasizes decentralization, or placing the greatest authority and responsibility at the local level." Respondents were then asked to indicate the current position of the agency on a Likert-type scale from 3 (very strongly decentralized) to -3 (very strongly centralized). The response mean was 0.17, which indicates that employees perceived the agency to be only slightly decentralized.

Formalization

Respondents were asked to indicate the extent to which they agreed with six statements regarding agency formalization, coded as 1 (formalized) to 5 (not formalized). Total formalization was calculated as 2.60, which is close to neutral, but is leaning towards formalized.

Frequency of employee transfers

Respondents were asked to report the number of years they had worked in their current office, as well as the total years they had worked for the BLM. The mean percentage of time BLM employees worked in their current office was 65% of their BLM career. The ratio of time in



current location to time in the organization revealed that most employees had spent the majority of their career in their current office.

Communication

Respondents were asked to report the number of times per week they communicated with their supervisor, subordinates (if applicable), and colleagues from other professional disciplines. Converting weekly figures to annual rates indicates that respondents communicate an average of 711 times per year with these people (mean 270 times with subordinates, 264 times with colleagues, and 177 times with supervisor). Respondents also reported the proportion of their communications that were face-to-face, as opposed to telephone, e-mail, fax, and letters/ memos. Over 75 % of respondents indicated face-to-face communication was most common. Respondents also reported whether communication was most often two-way or one way. In upward (to supervisor) communications, 70 % of the respondents reported equal sharing of information (two-way), and in downward (to subordinates) communications, 86 % of the respondents reported equal sharing.

Budget flexibility

Respondents were provided with four statements about budget flexibility and were asked to indicate the extent to which they agreed with the statements on a scale from 1 (strongly disagree that their funding is flexible) to 5 (strongly agree that their funding is flexible). Overall, with a 2.4 mean score across the four statements, respondents viewed the BLM's budget structure as more inflexible than flexible.

Willingness to share decision-making power

Respondents were provided with two dichotomous pairs of statements about agency willingness to share decision-making power. They were asked to indicate the current position of the agency on a Likert-type scale from 3 (very willing to share power) to -3 (very unwilling to share power). For the statement regarding BLM's willingness to share decision-making power with the public, the mean response was 0.22, indicating a leaning in the direction of the BLM being willing to share decision-making power with the public. Similarly, the mean response for the statement regarding the BLM's willingness to share power with other government resource management agencies was 0.63.

Willingness to innovate and experiment

Respondents were presented with three dichotomous pairs of statements about agency encouragement of employees to innovate and experiment. They were asked to indicate the current position of the agency on a Likert-type scale from 3 (willing to innovate/experiment) to -3 (unwilling to innovate/experiment). For the statement regarding BLM's willingness to promote new practices, the mean response was 0.21, indicating a leaning in the direction of willing to innovate/experiment. Similarly, the mean response for the statement regarding the BLM's willingness to promote experimentation, the response was 0.12. Finally, the mean response for



the statement regarding the BLM's willingness to promote admitting errors, the mean response was -0.14. All three of these mean responses were close to the neutral value of 0. However, according to respondents, it appears that the BLM is more inclined to let their employees take risks and experiment than not. On the other hand, it appears that the BLM is slightly inclined to foster an environment where employees feel encouraged to only report successes and good news rather than failures or errors.

Attitudes and beliefs about resource use and the environment


Respondents were presented with three dichotomous pairs of statements about attitudes and beliefs in the agency. They were asked to indicate the current position of the agency on a Likert-type scale from 3 (agency emphasizes future generations, ecological integrity, and non-commodity resources) to -3 (agency emphasizes present generations, goods/services, and commodities, respectively). For the statement regarding the BLM's temporal focus, the mean response was 0.09, which is very close to an equal balance. However, the mean responses for the statements regarding ecological integrity v. goods/ services (-0.55) and non-commodity resources v. commodities (-0.46) indicate a perception that the agency leans modestly towards goods/services and commodity outputs rather than an equal balance.

Leadership

Respondents were asked to indicate the extent to which they agreed or disagreed with each of three statements regarding the presence of agency leadership conducive to implementing ecosystem management, on a scale from 1 ("strongly disagree") to 5 ("strongly agree"). The mean value across these statements was 3.3, which is slightly above the midpoint and suggests a perception that visionary leaders are present to implement ecosystem management.

Political Support

Respondents were asked to gauge the support for ecosystem management, on a scale from 0 ("no support") to 4 ("strong support"), by a range of specific political actors, including state legislators/governor in their state, the president/White House, U.S. Congresspersons and/or their staff, local government officials in their area, people favoring commodity production, people favoring recreation, and people favoring preservation. In addition, respondents were asked to rate the amount of influence, on a scale from 0 ("no influence") to 4 ("high influence"), that each of these actors has on the management of BLM lands. Political support was then multiplied by political influence to obtain a weighted score for political support, ranging from 0 to 16. This measure was created to account for the fact that a political entity may have strong support for ecosystem management, but little political influence – potentially leading to a negligible positive impact on the BLM's implementation of ecosystem management. The opposite instance, in which a political entity might have high influence, but little support for ecosystem management, was also assumed to have an insignificant positive impact on the BLM's implementation of ecosystem management.



The mean political support scores suggest that the highest combined support and influence come from people favoring preservation (mean score = 5.7, on a scale from 0 to 16), followed by U.S. Congresspersons/staff (5.2), and people favoring recreation (5.0). The lowest combined support and influence are perceived to be from local government officials in their area (3.5). Across all political actors listed, the mean score is just 4.6 on the scale from 0 to 16.

Funding

Respondents were asked to indicate the extent to which their work unit had adequate funding for each of the ten components of ecosystem management. The extent to which funding was perceived to be available was rated on a scale from 0 (“not at all”) to 4 (“to a great extent”). Available funding was highest for collaborative stewardship (2.53) and interagency cooperation (2.51), and lowest for adaptive management (1.11). The mean score across all ten items was 2.07, which is very close to the middle value but leaning slightly towards funding “to a great extent”.

Accountability

Accountability was measured in a fashion similar to funding on the questionnaire. Respondents were asked to indicate the extent to which their respective “work units are held accountable for” each of the ten components of ecosystem management on a scale from 0 (“not at all”) to 4 (“to a great extent”). Respondents rated collaborative stewardship highest (mean 3.27), followed by interagency cooperation, while adaptive management was rated lowest (mean 1.35). Across the ten items, the mean rating was 2.62, which is towards the “to a great extent” end of the scale.

Goal 2: The Extent of Ecosystem Management Implementation

The second goal of this study was to measure the extent to which the BLM is implementing ecosystem-based management practices. To measure ecosystem management implementation, respondents were asked to indicate, on a Likert-type scale from 0 (“not at all”) to 4 (“to a great extent”), the extent to which their work unit implemented each of the ten ecosystem management components. Most all of the ecosystem management components had a mean above 2, indicating that BLM employees believe that these activities are being “somewhat done” to done “to a great extent” by their work units. The one exception to this trend was the component of adaptive management – “designing and executing experiments for the purpose of filling gaps in knowledge” – which had a mean value of just 1.57.

Statistical tests were used to identify significantly different means and rank the extent to which each of the ecosystem management components is perceived as being done. BLM employees indicated that the social components of ecosystem management (collaborative stewardship and interagency cooperation) are being done to the greatest extent, while the more scientific components (monitoring and experimentation) are perceived to be done the least (see Table 3). Interestingly, the rankings exhibited remarkable consistency across geographic regions. Despite



the BLM’s relatively decentralized structure, no significant differences among the states were found on the rankings of any of the ten ecosystem management components.

Table 3: BLM employees’ ranking of ecosystem management components.

Rank ^a	Ecosystem Management Components	Mean ^c (n = 260-269)	Standard Deviation
1	Collaborative stewardship	3.41	0.87
1	Interagency cooperation	3.33	0.81
3	Integration of scientific information	3.16	0.92
4	Protection of native species diversity	2.97	0.96
4	Hierarchical context	2.90	1.04
4	Ecological boundaries	2.85	0.99
4	Integration of social and economic information sources	2.73	0.95
4	Preservation of ecological processes	2.68	1.01
4 ^b	Monitoring and adapting	2.60	1.10
10	Designing and executing experiments	1.57	1.05

Source: Survey responses.

^aEquivalent ranks indicate that the items are not significantly different at p = 0.05.

^bAll six components are given the fourth ranking because each component is indistinguishable from the component directly below it. However, it should be noted that protection of native species diversity is significantly different from integration of social and economic information sources, preservation of ecological processes, and monitoring and adapting. Hierarchical context is also significantly different from integration of social and economic information sources, preservation of ecological processes, and monitoring and adapting. Finally, ecological boundaries is significantly different from preservation of ecological processes and monitoring and adapting.

^c On a scale from 0 to 4, where 0 = not at all implemented to 4 = implemented to a great extent.

Goal 3: Factors Perceived to Impact Ecosystem Management Implementation

The final goal of this study was to uncover the factors perceived to impact ecosystem management implementation efforts specifically in the BLM. Two survey questions asked respondents to list the factors they thought had most significantly aided or impeded the BLM’s use of ecosystem based management approaches. Tables 4 and 5 provide the results from these two survey questions.

Table 4: Perceived barriers to ecosystem management implementation.

Factors Mentioned	Frequency (# of times mentioned)
Political pressure to manage BLM lands for a particular use - bias towards particular land use(s)	40
Lack of resources (money, staff, etc.)	31
External/internal fear of, or resistance to change, risk-taking, innovation, or experimentation	22
Lawsuits and appeals	22
Fragmented land ownership patterns – mismatch of ecological and administrative boundaries	18
Inability to get various interests to listen to different views, compromise, or come to a consensus	16
Different interpretations of, and lack of understanding about the meaning of ecosystem management	15
Fragmented and short-term budget structure	13
Balancing needs/desires of conflicting interests	13
Short-term nature of the political system or frequent change in political priorities and focus	13

Table 5: Perceived facilitators of ecosystem management implementation.

Factors Mentioned	Frequency (# of times mentioned)
Existing cooperative agreements, partnerships, or good working relationships with universities, government, and non-government actors	16
Public support for, or pressure to use ecosystem-based approaches to management	16
Hardworking, dedicated, and passionate staff who desire to make well-informed decisions	15
Having a good variety of experienced and knowledgeable specialists available	13
BLM managers who are supportive of ecosystem-based management approaches	13
Agency culture that fosters collaboration (between staff members of different disciplines and between BLM and stakeholders)	12
Internal/external willingness to value all resources and listen to diverse viewpoints	12
FLPMA – multiple-use mandate and requirements for comprehensive land management planning	11
Organizational structure that encourages watershed, landscape, or ecosystem level plans and assessments (i.e. Northwest Forest Plan)	10
Existence of interdisciplinary teams for planning and management	9



DISCUSSION

Does the BLM Exhibit Characteristics Thought to Facilitate Ecosystem Management Implementation?

The first goal of this study was to determine the extent to which the BLM exhibits the structural, cultural, leadership, and political characteristics thought to impact the implementation of ecosystem management. Overall, the results were somewhat positive (see Table 6). As described below, structurally, the BLM was found to have a communication structure likely to facilitate ecosystem management implementation. Additionally, it was found that agency employees remain in one location for a considerable time, which has been found to facilitate collaborative and cooperative efforts. However, according to respondent perceptions, the agency was not considered to be highly decentralized. Formalization was rated fairly high and budget flexibility was rated fairly low, which would likely pose barriers to implementation of ecosystem based management approaches.

Table 6: BLM’s ratings of characteristics thought to impact ecosystem management implementation.

Factors Measured	Exhibits Ecosystem Management Facilitating Characteristic?
Structural Factors	
1. Centralization	Yes, but close to neutral
2. Formalization	No
3. Employee Transfer	Yes
4. Communication Frequency	Yes
5. Communication Method	Yes
6. Communication Flow	Yes
7. Budget Structure/Flexibility	No
Cultural Factors	
1. Power Sharing	Yes, but close to neutral
2. Innovation and Experimentation	Yes, but close to neutral
3. Balanced Temporal Focus	Yes
4. Balanced Environmental Focus	Somewhat
5. Balanced Resource Focus	Somewhat

Leadership	Yes, but close to neutral
Political Factors	
1. Support for Ecosystem Management	No
2. Funding for Ecosystem Management	Yes, moderately
3. Accountability	Yes, for most components

From a cultural standpoint, the agency somewhat fosters attitudes and beliefs about resource use and the environment that are likely to facilitate implementation efforts. The temporal focus is close to equally balanced between present and future generations, while the agency is leaning a bit in the direction of favoring commodity production, and goods/services. According to perceptions of power sharing, innovation, and experimentation, the agency is leaning in the direction thought to facilitate ecosystem management implementation, though most of these items were close to neutral.

Leadership results were leaning in a positive direction, but results were very close to neutral. Many respondents indicated in writing on their survey that there is a mix of good and poor leaders throughout the agency. Consequently, an overall finding of leadership close to neutral is not surprising.

According to BLM employee perceptions, the agency does not have much political support for the use of ecosystem management. However, responses on funding and accountability seem fairly promising. BLM employees perceived that most of the components of ecosystem management were funded from “somewhat” to “a great extent.” However, the majority of those means were falling much closer to “somewhat” than “to a great extent.” For a few of the components of ecosystem management, funding was perceived to be very low. As for accountability, overall, respondents indicated that they are held accountable for all of the ecosystem management components “somewhat” to “a great extent.” The one exception to this finding was adaptive management.

Is the BLM Implementing Ecosystem Management?

The findings above indicate that BLM employees perceive that many of the factors thought to facilitate ecosystem management implementation are indeed present. In fact, results regarding the ten components of ecosystem management revealed that BLM employees perceived ecosystem management to be implemented overall above the midpoint of the scale. One aspect of adaptive management, “designing and executing experiments,” was not perceived as being implemented much, but the others were. In fact three components were perceived as being strongly implemented (mean values above 3 on a scale from 0 to 4): collaborative stewardship,



interagency cooperation, and integration of scientific information. Findings were consistent throughout the agency, as no significant differences across geographic location were found.

BLM employees identified a number of reasons for their perceived success with ecosystem management implementation (see Table 5). That is not to say that the BLM is without any challenges or room for improvement. Respondents indicated a number of barriers to ecosystem management's implementation as well (see Table 4). Additionally, it is important to remember that this questionnaire asked respondents for their perceptions regarding success, which may or may not be the case on the ground. Additional studies gathering non-perceptual data are needed to draw any further conclusions.

CONCLUSIONS

Many critics and proponents of ecosystem management have contended that there are simply too many barriers standing in the way of successful implementation. The finding that ecosystem management is perceived as being implemented overall in the BLM bodes well for ecosystem management's success in the United States. As discussed previously, the BLM manages approximately 1/8 of the surface land in the U.S., which represents a significant portion of the land in this country. Once again, however, it is important to remember that these positive findings need to be verified with further studies focusing on actual ground results.

Another important implication of this study is that according to the perceptions of BLM employees, the BLM is in many respects a different agency than it has been historically portrayed. Previous studies have characterized the agency as highly decentralized, not very formalized, discouraging of frequent employee transfers, and "captured" by commodity interests (Clarke & McCool 1996; Culhane 1981; Dana & Fairfax 1980). The results from this study found the BLM to be much less decentralized than previously thought. The agency was also found to be fairly formalized, which runs counter to prior research. Another surprise was the fact that the BLM, while leaning in the direction of favoring commodity production, was not found to be doing so to a large extent. The only finding from this study that matched conclusions drawn from other studies on the BLM was the fact that BLM employees were not found to be frequently transferred from one location to the next. However, overall, these results seem to indicate that the agency may be moving away from its historical position as a decentralized and captured agency to a more centralized, unified, and balanced agency.

No significant differences between states regarding the implementation of ecosystem management components were found. This finding once again seems to confirm the BLM's movement towards uniformity. However, another interpretation of these results could perhaps be that regardless of geographic differences, certain components of ecosystem management are perceived to be more difficult to implement than others.




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REFERENCES

- Bowersox, J. 2004. Fire on the Hill: Using Ecological Disturbance Theory to Understand the Ambiguous Prospects of the Northwest Forest Plan. In *Forest Futures: Science, Politics, and Policy for the Next Century*. K. Arabas and J. Bowersox (Eds.) Lanham, MD: Rowman and Littlefield.
- Butler, K.F. and T.M. Koontz. 2005. Theory into Practice: Implementing Ecosystem Management Objectives in the USDA Forest Service. *Environmental Management* 35(2):138-150.
- Clarke, J.N. and D.C. McCool. 1996. *Staking out the Terrain: Power and Performance Among Natural Resource Agencies*. Albany, NY: State University of New York Press.
- Cortner, H.J., and M.A. Moote. 1999. *The Politics of Ecosystem Management*. Washington, D.C.: Island Press.
- Culhane, P.J. 1981. *Public Lands Politics: Interest Group Influence on the Forest Service and the Bureau of Land Management*. Baltimore, MD: The John Hopkins Press.
- Dana, S.T. and S.K. Fairfax. 1980. *Forest and Range Policy: Its Development in the United States*. New York, NY: McGraw-Hill Book Company.
- Danter, K.J., D.L. Griest, G.M. Mullins, and E. Norland. 2000. Organizational Change as a Component of Ecosystem Management. *Society and Natural Resources* 13:537-547.
- Grumbine, E.R. 1997. Reflections on "What is Ecosystem Management?" *Conservation Biology* 11(1):41-47.
- Grumbine, E.R. 1994. What is Ecosystem Management? *Conservation Biology* 8(1):27-38.
- Haeuber, R. 1998. Ecosystem Management and Environmental Policy in the United States: Open Window or Closed Door? *Landscape and Urban Planning* 40:221-233.
- Hage, J. and M. Aiken. 1970. *Social Change in Complex Organizations*. New York, NY: Random House.
- Hall, R.H. 2002. *Organizations: Structures, Processes, and Outcomes*. Upper Saddle River, NJ: Prentice Hall.

- Holling, C.S. and G.K. Meffe. 1996. Command and Control and the Pathology of Natural Resource Management. *Conservation Biology* 10(2):328-337.
- Interagency Ecosystem Management Task Force (IEMTF). 1995. *The Ecosystem Approach: Healthy Ecosystems and Sustainable Economies*. White House Office of Environmental Policy Gen. Tech. Rep. PB95-265583, PB95-265591, and PB95-265609.
- Knight, R.L. and G.K. Meffe. 1997. Ecosystem Management: Agency Liberation from Command and Control. *Wildlife Society Bulletin* 25(3):676-678.
- Meidinger, E.E. 1997. Organizational and Legal Challenges for Ecosystem Management. In *Creating a Forestry for the 21st Century*. A.K. Kohm and J.F. Franklin (Eds.) Washington, D.C.: Island Press.
- Nutt, P.C. and R.W. Backoff. 1993. Transforming Public Organizations with Strategic Management and Strategic Leadership. *Journal of Management* 19(2):299-347.
- Rigg, C. 2001. Orchestrating Ecosystem Management: Challenges and Lessons from Sequoia National Forest. *Conservation Biology* 15(1):78-90.
- Schlager, D.B., and W.A. Freimund. 1994. *Institutional and Legal Barriers to Ecosystem Management*. Gen. Tech. Rep. submitted to: The Eastside Ecosystem Management Project.
- Slocombe, D.S. 1998. Lessons from Experience with Ecosystem-Based Management. *Landscape and Urban Planning* 40:31-39.
- Steele, B.S., and E. Weber. 2001. Ecosystem Management, Decentralization, and Public Opinion. *Global Environmental Change* 11:119-131.
- Stein, S.M. and D. Gelburd. 1998. Healthy Ecosystems and Sustainable Economies: The Federal Interagency Ecosystem Management Initiative. *Landscape and Urban Planning* 40:73-80.
- U.S. Department of the Interior (US DOI). 2004, March 8. National Environmental Policy Act Revised Implementing Procedures; Notice. *Federal Register*, Washington, D.C.: U.S. Department of the Interior.
- U.S. Department of the Interior, Bureau of Land Management (US DOI BLM). 2005a. National Conservation Areas. Available at: <http://www.blm.gov/nlcs/conservation/> Accessed 2/6/2005.
- U.S. Department of the Interior, Bureau of Land Management (US DOI BLM). 2005b. Bureau Budget Highlights. Available at: <http://www.doi.gov/budget/2006/06Hilites/toc.html>. Accessed on 6/20/2005.
- U.S. Department of the Interior, Bureau of Land Management (US DOI BLM). 2004. Bureau of Land Management Facts. Available at: <http://www.blm.gov/nhp/facts/> Accessed 6/23/2005.

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- U.S. Department of the Interior, Bureau of Land Management (US DOI BLM). 2003a. Organizational Management. *BLM Manual* Section 1201.
- U.S. Department of the Interior, Bureau of Land Management (US DOI BLM). 2003b. Leaving a 4 C's Legacy: A Framework for Shared Community Stewardship. Available at: <http://www.blm.gov/4Cs/> Accessed 6/27/2005.
- Van de Ven, A.H. and D.L. Ferry. 1980. *Measuring and Assessing Organizations*. New York: John Wiley and Sons.
- Westley, F. 1995. Governing Design: The Management of Social Systems and Ecosystems Management. In *Barriers & Bridges to the Renewal of Ecosystems and Institutions*. L.H. Gunderson, C.S. Holling, & S.S. Light (Eds.) New York, NY: Columbia University Press.
- Wondolleck, J.M. and S.L. Yaffee. 2000. *Making Collaboration Work: Lessons from Innovation in Natural Resource Management*. Washington, D.C.: Island Press.
- Yaffee, S.L. 1997. Why Environmental Policy Nightmares Recur. *Conservation Biology* 11(2):328-337.
- Yaffee, S.L. 1996. Ecosystem Management in Practice: The Importance of Human Institutions. *Ecological Applications* 6(3):724-727.
- Yaffee, S.L., A.F. Phillips, I.C. Frenzt, P.W. Hardy, S.M. Maleki, B.E. Thorpe. 1996. *Ecosystem Management in the United States: An Assessment of Current Experience*. Island Press, Washington, D.C.



About the ECARP (Environmental Communication, Analysis, and Research for Policy) Working Group

Located within the School of Environment and Natural Resources, the ECARP (Environmental Communication, Analysis, and Research for Policy) Working Group is a vibrant and multi-disciplinary research, development, and consultation center staffed by a core group of affiliated faculty members and graduate research associates representing the social, management, and natural sciences. In addition to a core of faculty leaders, ECARP serves as a clearing-house, tailored to particular projects, by gathering research and support personnel from across the campus and nation as needed.

The ECARP has five fundamental objectives:

1. To apply technical knowledge and analytical methods to key environmental and natural resource questions identified by clients such as Federal, State, and local management agencies and private entities.
2. To advance the state of knowledge and disseminate findings for concepts and methods concerned with environmental and natural resource issues.
3. To conduct innovative and valuable research that helps frame thinking and debate about environmental and natural resource issues.
4. To recruit top-quality graduate students to the School of Environment and Natural Resources and provide students with opportunities to work with faculty on projects within the ECARP Working Group.
5. To serve as a focus for student and faculty research by applying for and securing research funding from Federal, State, University, non-governmental, and other sources.



Some examples of the types of research and client-based projects the ECARP might undertake include the research and development of:

- policy analysis tools to gauge the effects of policy instruments on target populations and the environment
- stakeholder collaboration and citizen participation processes in natural resources policy
- structured environmental decision making approaches
- cutting edge research in the natural sciences to inform environmental policy choices
- comprehensive environmental risk communication approaches
- innovative environmental education and interpretive efforts
- courses to be offered in the School of Environment and Natural Resources for students as well as the community of environmental professionals

For More Information

More information is available at the ECARP website: <http://ecarp.osu.edu>

As part of its effort to develop and disseminate knowledge, ECARP publishes analytical reports related to environmental and natural resource issues. These reports are available through the ECARP website.





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