

# Organizational Change as a Component of Ecosystem Management

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*Ecosystem approaches to natural resource management place demands on adopting agencies to focus on those activities that support organizational change, especially communication activities, both to foster adoption of, and later to support continuance of ecosystem management activities. An assessment of the U.S. Fish and Wildlife Service's Ecosystem Approach to Fish and Wildlife Conservation found that implementation was incomplete, and its management team consequently took actions related to organizational transformation. This attention to organizational change, concentrated on both agency function and form, represents a new modus operandi for the governance of natural resource management agencies. The concept of leadership, as contrasted to management, is offered as an overlooked tool for achieving an ecosystem approach to natural resource management.*

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Federal natural resource management agencies, as well as many state and private organizations, have adopted ecosystem approaches to natural resource management

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since 1994. As these agencies perform formal and informal evaluations of these changes in management approach, it is important that specific agency experiences be shared in order to develop a theoretical understanding of ecosystem management. This article uses the experience of one such agency, the U.S. Fish and Wildlife Service, as ascertained in a recent organizational assessment, to build a theoretical understanding of the organizational aspects of ecosystem management.

The central concept of this article is that ecosystem approaches to natural resource management place demands on adopting agencies to focus on those activities that support organizational change, especially communication activities, both to foster adoption of, and later to support continuance of ecosystem management activities. In addition, the focus on organizational change should be concentrated on both agency function and form. This attention to organizational change and function represents a new *modus operandi* for agency governance. The concept of leadership, as contrasted to management, is offered as an overlooked tool for achieving an ecosystem approach to natural resource management.

The concepts to be explored here arose from a 1997 organizational assessment of the U.S. Fish and Wildlife Service (FWS) by the authors. However, it is not the results of the assessment that are being reported, as they are available in the public domain (Mullins et al. 1998). Rather, it is the response by agency officials to those results and to recommendations of the assessment team that make up the important data of this paper. Assessment data are presented only as examples of information presented to agency officials in the assessment report. We review pertinent theory from the fields of organizational change and leadership, provide a brief history of the FWS Ecosystem approach to management, and examine the decisions of FWS officials, all in order to provide an agency change model to be tested as ecosystem management evolves in the field of natural resources management.

## **Organizational Requirements of Ecosystem Management**

Implementation of ecosystem management requires organizational changes within natural resource management agencies (Grumbine 1994). Four categories of changes for support of ecosystem management have been identified in the literature: (1) professional emphasis, (2) interdisciplinary collaboration, (3) the role of decision making, and (4) organizational values and culture. Much overlap and interaction exist among these categories.

Changes in professional emphasis involve a move from traditional natural resource management fields to a greater inclusion of conservation biology and applied ecology (Grumbine 1994; Clarke and McCool 1997). From an organizational perspective, the effect is a change from stable, linear internal processes to constantly changing, nonlinear processes outside the experience of most agency personnel (Grumbine 1997; Knight and Meffe 1997).

Organizational stability is not the only tradition challenged by these changes. A change in interdisciplinary collaboration is also required by ecosystem management. Both technical organizations and government bureaucracies tend to compartmentalize information along disciplinary lines; this is especially prevalent in natural resource management agencies where discrete control (i.e., turf) has been more common than cooperation (Westrum 1994; Clarke and McCool 1997). However, ecosystem management requires that resource managers not just share information, but work collaboratively to address system problems (Slocombe 1993, Grumbine 1994, 1997; Yaffee 1996, 1997). This change from specialized, compartmentalized

expertise to interdisciplinary work is often a fundamental transformation of agency culture, power relationships, and professional norms (Yaffee 1996; Grumbine 1997; Knight and Meffe 1997).

While intra-agency competition results in poor decision making, implementation of ecosystem management changes the very role of decision making in the agency. Traditionally, natural resource managers have been expected to increase predictability and reduce surprises (Knight and Meffe 1997, Yaffee 1997). Consequently, decisions were postponed pending ever-increasing data accumulation and analysis, which often resulted in organizational paralysis. However, the adaptive management, ranging from provisional decision making to organizational learning, demanded by ecosystem management translates directly into an adaptive governance of resource agencies (Grumbine 1997). Management experiments, provisional decision making, and risk taking are anathema to the traditional risk-averse management style of the past (Christensen et al. 1996; Grumbine 1997; Knight and Meffe 1997, Yaffee 1997).

Making such organizational changes creates significant changes in agency values and culture. These changes entail evolving from top-down control to field-level empowerment (Yaffee 1996). In order for the new system to operate effectively, communication changes are required. Information must be passed horizontally, face to face, between disciplines at all levels of the organization. Information must flow up through the organization, as well as down via management decisions (Westley 1995; Grumbine 1997). Internal communication, often undervalued in natural resource management, must become highly important to all agency personnel (Christensen et al. 1996). Efficiency, strongly valued by many natural resource agencies, must give way to flexibility, responsiveness, and inclusion (Yaffee 1997). This presupposes that all personnel are familiar with agency goals and priorities, in contrast to past agency culture where field personnel were often isolated from many agency affairs.

Several barriers exist to the fundamental changes just described, not the least of which is the bureaucratic nature of resource management agencies (Westley 1995). Bureaucracies, generally less adaptive than other organizations, are resistant both to new information and to changes in culture (Westley 1995; Yaffee 1996). This resistance is especially problematic given the emergent nature of ecosystem management, which by design is provisional in both definition and operationalization (Franklin 1997; Grumbine 1997). While organizational changes demanded by ecosystem management are dramatic in the history of natural resource management agencies, experience and theory derived from other societal sectors can be applied to derive insight and guidance.

Agency changes forced by ecosystem management are similar to corporate transformation (Blumenthal and Haspeslagh 1994). These kinds of transformations, often involving tensions between competing interests and values both within and outside the organization, are better addressed as a whole rather than incrementally (Nutt and Backoff 1995). Such holistic approaches can be achieved through coordinated, sequential change processes (e.g., Goodstein and Burke 1991; Ishizuna 1990; Spector 1995).

Organization change processes have been variously described, but most have common elements. To achieve organizational transformation, the actions of individuals must change (Stewart 1989). Individual transition is usually described with three steps: letting go of the past, moving through a neutral zone of instability, and arriving at the new state (Bridges 1991; Iacovini 1993). Such a process causes stress

**TABLE 1** Steps in Organizational Transformation

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1. Establishing a sense of urgency
  2. Forming a powerful guiding coalition
  3. Creating a vision
  4. Communicating the vision
  5. Empowering others to act on the vision
  6. Planning for and creating short-term wins
  7. Consolidating improvements and producing more change
  8. Institutionalizing new approaches
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*Note.* Adapted from Kotter (1995) with permission.

and confusion, and individual responses range from engaging in the change process to actively resisting change (Gabele 1981; Iacovini 1993).

Achieving these individual transitions also involves processes generally well supported in the literature. Impactful transformation requires a felt need for the change (Spector 1987). Creating and communicating a vision for the future state of the organization is critical to successful organizational change (Nutt and Backoff 1995). Communication, to both internal and external stakeholders, is necessary, and continuous reinforcement of messages is critical (Quirke 1995; Stewart 1989). Internal communication cannot be limited to written media; personal communication and modeling of personal commitment by leaders are strong determinants of successful organizational change (Bass 1990; Niehoff, Enz, and Grover 1990). Various sound change models exist; Kotter's (1995) eight-step change model, shown in Table 1, is used for illustrative purposes in that it has much in common with others found in the literature. In addition, Kotter's (1995) model builds on transformational leadership, which has been shown to be a critical component of successful change (e.g., Bass 1990; Bass and Avolio 1993; House and Shamir 1993). Kotter (1995) defined leadership as a process to establish direction, align people, and motivate and inspire—with the ultimate goal of producing movement or change. In contrast, the goal of management is to produce consistency and order through the processes of controlling, planning, budgeting, organizing, and staffing.

The following discussion is based on the contention that transformational leadership is needed during adoption of ecosystem management by agencies because of the dramatic nature of changes that must occur in support of adoption. Moreover, we argue that ecosystem management itself requires transformational leadership after implementation because of the adaptive, nonlinear nature of ecosystem management. For example, corporate self-renewal has been shown to be an important type of organizational transformation (Blumenthal and Haspeslagh 1994), and innovative organizations have been shown to exist in a state of revolution in permanence (Shareef 1997). We suggest that organizational self-renewal and revolution in permanence best describe the future of agencies practicing ecosystem management.

### **The Ecosystem Approach of the U.S. Fish and Wildlife Service**

Because of the evolutionary history of ecosystem management, it is difficult to pinpoint when it began in the U.S. Fish and Wildlife Service (FWS). Indeed, the FWS Director when the ecosystem approach was adopted recognized that many of its

components were being practiced by individuals in the FWS prior to formal adoption (Beattie 1996). However, only recently has the FWS sought to make these activities the norm throughout the agency. Ecosystem management concepts were first formally embraced by the FWS in 1992 under the heading of biodiversity management. In 1995, a formal concept document, entitled "An Ecosystem Approach to Fish and Wildlife Conservation," was adopted by the FWS (U.S. FWS, 1995).

The purpose of the ecosystem approach, according to the concept document, was not to change the FWS mission to "conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people," but to change the means of fulfilling the FWS mission (U.S. FWS, 1995). More recently, "in cooperation with others" was added to the FWS mission statement. The FWS ecosystem approach has three major goals: (1) increasing effectiveness of conserving fish and wildlife, (2) improving cross-program coordination within the FWS, and (3) increasing the quality and quantity of partnerships with external stakeholders. The concept document acknowledged the need to change the way the agency operated, through involving stakeholders, utilizing interdisciplinary approaches, practicing adaptive management, engaging all levels of the agency in decision making, and delegating power to the lowest appropriate level in the agency.

The FWS incorporated an organizational structure change into implementation of the ecosystem approach for its three largest programmatic areas: Refuges and Wildlife, Fisheries, and Ecological Services. To support the ideas identified in the concept document, FWS implemented a structure in its seven regions that placed all field personnel for these three programs under a Geographic Assistant Regional Director (GARD); previously, most field and regional office staff had been supervised by an Assistant Regional Director (ARD) with programmatic supervisory and budgetary responsibilities. Each new GARD had supervisory responsibility for field personnel in an "ecoregion," and budgetary and policy responsibility for one of the three programs for their entire region. Many field personnel no longer reported to a supervisor in their program. Each GARD had two roles in the region: program leader (staff) for the entire region for one major program, and field supervisor (line) for three major programs for a geographic area.

During the implementation of the ecosystem approach, other major yet unrelated changes were occurring in the FWS. The research branch of the FWS was placed in the National Biological Service, which was subsequently located under the U.S. Geological Survey as the Biological Resources Division. At the same time, government downsizing resulted in head-count reductions in the agency, while workloads were increasing due to increased numbers of refuges, endangered species, and regulations. Organizational disruption was exacerbated by furloughs caused by the government shutdown in 1995.

The organizational upheaval caused by implementation of the ecosystem approach and other nonrelated factors was overlaid on an agency that was ill prepared to deal with these changes. As illustrated by Clarke and McCool (1997), the FWS has had a chaotic organizational history, with little political clout, and yet is "overwhelmed by inadequate resources, bitter controversies, and difficult if not impossible assignments" (p. 122).

In 1997, the FWS contracted with the authors to perform a formative assessment of the implementation of the ecosystem approach. This assessment was intended to provide a status of the implementation in order for the FWS Directorate to take actions to improve the ecosystem approach. To meet that goal, data were collected from FWS employees via questionnaires, focus-group interviews, and

personal interviews, as well as soliciting letters from external stakeholders. Participants provided observations and opinions of the current situation in the FWS, and recommendations on how the FWS should proceed in the future; the assessment team also provided recommendations for improvements. The complete assessment findings, employee recommendations, and assessment team recommendations can be found in Mullins et al. (1998), and are only briefly described here.

The assessment showed that FWS personnel at all levels in the agency were confused about the ecosystem approach. Lack of personal involvement, lack of clarity about its definition, and inability to distinguish ecosystem approach implementation from the other FWS organizational changes both obfuscated implementation issues for personnel and led to generally unfavorable opinions of the ecosystem approach. Conversely, personnel reported strong support for the philosophy of integrated landscape-scale management; they were unhappy with FWS attempts to achieve it.

The assessment (Mullins et al. 1998) found that the ecosystem approach was not integrated into the everyday work of the FWS, and that most employees had little or no involvement in it. In particular, agency leaders tended to operate in a manner not consistent with organizational changes that supported the ecosystem approach, and agency systems and processes had not been updated to reflect the new management paradigm. Communication within the FWS to support the change effort had not been impactful. As a result, leadership of and accountability for change management were often cited by personnel as implementation issues.

The aforementioned implementation issues should not be construed to mean that the ecosystem approach was unsuccessful. On the contrary, the assessment found that cross program collaboration had improved markedly in the agency as a result of ecosystem approach efforts, and partnering with stakeholders had also improved. Specific resource successes were identified as resulting from ecosystem approach activities. However, because of organizational inefficiencies and concerns about loss of program consistency, a majority of employees wished to return to the previous organizational structure and to scrap many, but not all, of the components of the ecosystem approach.

The results of the assessment were presented to the FWS Directorate in early 1998, along with recommendations of the assessment team. These recommendations, together with the actions taken by the Directorate, are discussed in the next section.

## **Directorate Decisions**

The assessment study called for extensive recommendations for improving the ecosystem approach in the FWS. The assessment team believed that FWS personnel and management were focused on issues of form within the agency, without having paid enough attention to functional issues. Using the architectural maxim that form follows function, the team provided recommendations that moved from function-oriented actions to form-oriented actions. These are provided in Table 2, along with the recommendations of agency personnel as reported in the assessment, and with the decisions made by the FWS Directorate. It should be noted from Table 2 that agency personnel, including management, made few consistent recommendations involving the function end of the continuum, as indicated by the absence of clear opinion in the rows labeled clear vision, communication, problem solving, and personnel development. Most recommendations related to the form end of the continuum. This is indicative of an agency's culture that is management oriented. It should

**TABLE 2** Development of Recommendations and Decisions

	Topic	FWS personnel	Assessment team recommendation	Directorate decision
(Function)	Shared vision	N/A	Directorate to formulate and communicate consistent vision	Directorate formulated and shared a vision statement
	Consistent definition	Define EA in terms relevant to FWS	Directorate should define EA; create intra-agency dialogue about goals and challenges	EA reaffirmed as the normal work of FWS; committed to training and communication
	Communication	N/A	Leaders must initiate and reinforce communications by multiple channels	Leaders will visibly support EA and communicate its importance
	Problem solving	N/A	Leaders must eliminate organizational barriers to EA implementation	Directorate committed to clear guidance, training, and performance management
	Accountability	Hold managers accountable for support of EA	Leaders must be held accountable for actions supporting EA	Directorate identified seven-point action plan for FWS managers to support EA
	Personnel development	N/A	Leaders should provide training and experience for personnel, then select and promote them based on understanding and ability to use EA	Directorate committed to providing training, development, and rotational assignments, and to giving these experiences strong consideration in promotional opportunities
	Ecosystem boundaries	Reevaluate boundaries	Maintain ecosystem boundary definitions	Maintained current ecosystem boundaries
	Ecosystem teams	Keep teams, but improve support	Keep teams in place; support to become more issue focused	Teams will remain in place and become more issue focused
	Stakeholders	Increase importance	Partnerships must occur at different levels and by different means	Service committed to varying types of partnerships; eight-point action plan adopted
	Regional structure	Return to programmatic supervision (strong majority)	Matrix structure suggested to maintain technical expertise while focusing on geographic management	Matrix structure adopted that includes technical and geographic management
	National structure	Align Washington Office with regions	Maintain Washington structure, add Landscape Ecology Office	Maintained current Washington Office structure, no Landscape Ecology Office
	Budget process	N/A	Reconstitute the budget process to better support EA implementation	Investigate ways to reconstitute budget process to support EA while maintaining benefits
(Form)				

be noted that the assessment was not a referendum; the Directorate did not commit at the beginning of the assessment to implement what the majority of personnel recommended. The assessment was designed to inform decision making. The guiding concern was on how to build on past experiences and improve the service's Ecosystem Approach.

After hearing the assessment report and recommendations, the FWS Directorate, as communicated in an all-employees memorandum (U.S. FWS, 1998), adopted some altered recommendations and rejected one recommendation made by the assessment team. Table 2 shows these decisions compared with both personnel and assessment team recommendations.

The Directorate adopted decisions from the "function" end recommendations nearly without alteration. While these recommendations may seem self-evident, by committing to these decisions the Directorate's members have dedicated themselves

to new self-images as agency leaders. The Directorate recognized that changing the FWS structure without providing leadership for change was meaningless.

## Discussion

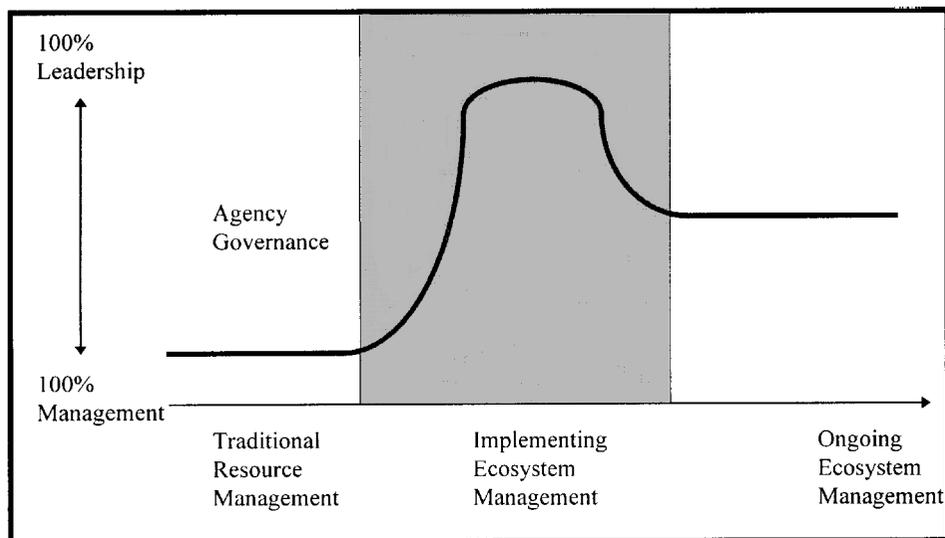
Implementing ecosystem management in natural resource agencies requires a shift in governance style. Table 3 shows Kotter's (1995) eight-step process for organizational transformation and how these steps were manifested in the 4-year experience with the FWS Ecosystem Approach and in the decisions made in 1998 by the FWS Directorate. By focusing on the elements of organizational transformation, the FWS greatly increases the likelihood of achieving adoption of the principles of ecosystem management.

As discussed earlier, however, agency change is not completed once ecosystem management is adopted. Ecosystem management demands continuous agency change, in that stable, linear, and predictable organizational processes will be replaced by adhocracy. For this reason, after implementation of ecosystem management, agency governance must be more leadership oriented than was previously required under earlier resource management models. Figure 1 shows how this shift is manifested before, during, and after implementation.

The change in Figure 1 is manifested both in leadership style of upper and mid-level officials in the organization and in the culture of the agency. Long-term evaluation of ecosystem management should test the hypothesis that transformational leadership of agencies, and agency cultures based on adhocracy, are predictors of successful ecosystem management efforts. As Yaffee (1996) stated, the ultimate outcomes of ecosystem management are so long term that proxy measures are required to monitor progress.

**TABLE 3** FWS Organizational Transformation

Change step (Kotter, 1995)	EA implementation 1994–1997	Directorate decisions, 1998
Establishing a sense of urgency	Reason for change not clearly articulated for personnel	Further agency changes clearly based on results of EA Assessment
Forming a powerful guiding coalition	Directorate not completely supportive of changes	Directorate decision-making process, and intragroup expectations of support of decisions
Creating a vision	Clear direction not established	New vision statement elucidated
Communicating the vision	Communication ineffective	Commitment to communicate, and to hold all levels of leaders accountable for communicating
Empowering others to act on the vision	Empowered personnel uncomfortable with lack of direction	Holding people accountable for change, providing training, increasing effectiveness of partnerships
Planning for and creating short-term wins	Wins not communicated or celebrated	Leaving ecosystem boundaries in place; keeping and supporting existing teams
Consolidating improvements and producing more change	Strong sense in the agency that changes should be reversed	Eliminating organizational barriers and restructuring organization structure to support change
Institutionalizing new approaches	N/A	Selecting and promoting personnel based on ability to use EA, review of budget process



**FIGURE 1** Implementing ecosystem management.

The process of continuous organizational renewal is time- and energy-intensive for agency leaders. As agency officials consider implementation of ecosystem management, it is incumbent that they first consider how they must change their leadership style to support both the organizational change and the ensuing stable organization. These individual transitions may seem counterintuitive at best, and should not be undervalued. There is a risk that focus on organizational structure will consume leaders and that leadership behaviors will suffer. Agency officials should consider employing leadership training, mentoring, or outside expertise to assist them in these changes.

Ecosystem management is complex, and adopting it is difficult both for the organization and for natural resource professionals. Organizational change requires ongoing assessment to keep on track. These assessments, which require data interpretation and recommendations, usually occur in environments that are emotionally charged. They are difficult because they require moving from data analysis to ascribing value to the data. The U.S. Fish and Wildlife Service took a major step toward change in 1994 by adopting the ecosystem approach; this 1997 study, a formative assessment, is one further step toward managing in an adaptive framework. Although ecosystem management within agencies is often focused on issues of form, a focus on organizational function will yield greater on-the-ground resource benefits.

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