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# Evaluating Collaborative Natural Resource Management

ALEXANDER CONLEY

North Fork John Day Watershed Council  
Monument, Oregon, USA

MARGARET A. MOOTE

Ecological Restoration Institute  
Northern Arizona University  
Flagstaff, Arizona, USA

*In this article, we look at the evolving collaborative natural resource management movement in the United States and discuss current calls to evaluate it. We then explore approaches researchers have used to evaluate both specific efforts and the broader movement. Evaluative criteria developed thus far by several researchers show commonalities as well as differences. We argue that evaluation approaches will necessarily vary with the evaluation's intent, the type of collaborative effort being evaluated, and the values of the evaluator. Evaluators need to consider and make explicit their standards for comparison, criteria, and methods in order to clarify the nature of an evaluation and facilitate the synthesis of findings.*

**Keywords** collaboration, evaluation, natural resource management, participatory decision making, process

Today, collaborative approaches to natural resource management are being broadly promoted as promising ways to deal with complex and contentious natural resource issues. As collaborative efforts become more widespread and are incorporated into official policies, both proponents and critics seek to evaluate these new approaches. Are these new approaches all that they are held up to be? Do they really lead to improved resource management? What can and cannot be reasonably expected of them and what variables influence their effectiveness? Answering these questions and others like them requires careful selection of methods to evaluate the effectiveness of collaborative efforts. In this article we give an overview of existing evaluation approaches and methods and discuss the considerations that should be taken into consideration by those conducting evaluations.

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Address correspondence to Margaret A. Moote, Ecological Restoration Institute, Northern Arizona University, PO Box 15018, Flagstaff, AZ 86011-5018, USA. E-mail: ann.moote@nau.edu

Many terms have been coined to describe what we are calling collaborative natural resources management. Collaborative efforts have been referred to as partnerships (Moote 1996; Williams and Ellefson 1997; Wondolleck and Yaffee 1994), consensus groups (Innes 1999), community-based collaboratives (Moote et al. 2000), and alternative problem-solving efforts (Kenney and Lord 1999). Collaborative approaches to natural resource management include watershed management (Natural Resources Law Center 1996), collaborative conservation (Brick et al. 2000; Cestero 1999), community forestry (Brendler and Carey 1998), community-based conservation (Western and Wright 1994), community-based ecosystem management (Gray et al. 2001), grass-roots ecosystem management (Weber 2000), integrated environmental management (Born and Sonzogni 1995; Margerum 1999), and community-based environmental protection (U.S. Environmental Protection Agency 1997). Specific models have been developed, such as coordinated resource management (Anderson and Baum 1988; Cleary and Phillippi 1993), and collaborative learning (Daniels and Walker 2000). While we recognize that these different names are not interchangeable, the approaches they refer to do share several common characteristics. In this article we use the term *collaborative natural resources management effort* to refer to multiparty natural resource management projects, programs, or decision-making processes using a participatory approach and explore the range of evaluation approaches that have been applied to such efforts.

An *idealized narrative* of collaborative natural resource management has emerged across the popular and academic literature. In it, collaboration is hailed as a way to reduce conflict among stakeholders; build social capital; allow environmental, social, and economic issues to be addressed in tandem; and produce better decisions (Bernard and Young 1997; Brick et al. 2000; Innes 1996; Jones 1996; Weber 2000). Calls for more collaborative decision making in natural resource management can be found in everything from the popular press (e.g., Krist 1998) to promotional videos (e.g., Bureau of Land Management 1995) to political speeches. Collaboration among diverse interests has been promoted by groups ranging from conservative think tanks (Harrington and Hartwell 1999) to critical theorists (e.g., Dryzek 1996). Numerous handbooks give guidance on developing effective collaborative processes (Clark 1997; Cleary and Phillippi 1993; U.S. Environmental Protection Agency 1997; Moote 1996; Paulson and Chamberlin 1998; Susskind et al. 1999), and analytical treatises detail the steps in their development (Gray 1989; Selin and Chavez 1995).

*Actual experience* with collaborative efforts has grown exponentially over the last 20 years, as collaborative responses to many resource-management challenges have developed both independently and simultaneously across the United States (Weber 2000). Hundreds of case studies describe specific efforts (e.g., Braxton Little 1997; Chisholm 1996; House 1999; KenCairn 1996; Mazaika 1999; Shelly 1998; Smith 1999), and many readers will be aware of collaborative efforts in their own regions. A number of studies catalogue some of these experiences (Bingham 1986; Coughlin et al. 1999; Kenney et al. 2000; Kusel and Adler 2001; Natural Resources Law Center 1996; Wondolleck and Yaffee 1994; 2000; Yaffee et al. 1996). Collaborative efforts are gaining considerable support: Many efforts have risen from the grass roots and from state and federal governments, and nongovernmental organizations and foundations are promoting collaborative efforts through a wide range of programs and policies (Dukes and Firehock 2001; U.S. Environmental Protection Agency 1997).

At the same time, collaborative approaches to resource management are attracting vocal critics (e.g., Blumberg and Knuffke 1998; Coggins 1998; Coglianese

1999; McCloskey 1998; Southern Utah Wilderness Association 1994). National interest groups claim that federal laws and the public interest are not adequately considered in local decision-making efforts. Many environmental groups charge that these efforts are co-opted by local economic development interests while industry groups contend the opposite. People outside the “inner circle” sometimes charge that their views are excluded, while agencies question whether successful collaborative efforts are replicable in other communities. Participants in processes that fail to achieve their desired outcomes may question the time and effort they invested. Kenney (2000) provides an excellent overview of these criticisms, which are forcing many people to rethink the idealized narrative of collaborative natural resource management.

As collaborative natural resource management gains prominence, calls for evaluations of both specific initiatives and the broader movement are becoming common (Innes 1999; Innes and Booher 1999; Kellert et al. 2000; Kenney 1999; Kenney 2000; Kenney et al. 2000; Leach et al. 2000; Moote et al. 2000; Selin et al. 2000). Collaborative groups themselves are initiating monitoring and self-evaluation processes, often as part of a participatory approach to adaptive management. Despite this widespread interest in using evaluation to learn from past experience, discussions of different approaches to evaluation and the issues that they raise are rare. There is a growing literature on evaluating collaborative efforts, but in most cases the definitions of success used and the basis for the methods chosen are not clear, limiting the generalizability of the findings (Leach 2000, 92). In this article, we describe different evaluation approaches and methods used for examining collaborative efforts; we then raise considerations that evaluators need to address, such as the normative nature of evaluation and the comparability of results.

## Evaluation Approaches

### *Why Evaluate?*

While interest in evaluating collaborative conservation efforts is widespread, motivations for evaluation vary. Participants in collaborative efforts want evaluations that can help improve their efforts and meet their personal goals. Facilitators and resource managers are looking for guidelines that help identify which approaches are appropriate in different circumstances. Policymakers want informed evaluations that help them formulate appropriate rules and regulations. Funders and interest groups need to determine which collaborative efforts to support and what stance to take on general policies promoting or inhibiting collaborative processes. Advocates want proof of their success (Innes 1999), while critics want to demonstrate that their concerns are well founded (e.g., Coglianese 1999). Academics are interested in exploring how collaborative resource management affects society, and in testing theoretical models on specific examples.

Ultimately, interest is fueled by the belief that effective evaluation can help: (1) determine when the idealized narrative used to justify collaborative natural resource management holds true, (2) address criticisms of these efforts, and (3) assess and refine efforts to institutionalize a movement that has developed largely at the grass-roots level. Between the critics and the current body of experience, even proponents are coming to realize that collaborative approaches to natural resource management can but do not always work and that at times failure comes at a heavy cost of time and effort (and, perhaps more significantly, in social capital consumed rather than

built). Ideally, evaluation will inform our understanding of both the potential and the limits of collaborative natural resource management.

### ***Who Evaluates?***

Collaborative efforts are constantly being evaluated, formally and informally, by those who participate in them, hope to learn from them, or are concerned about the outcomes they determine. Yet many people wonder who is best placed to evaluate these efforts. Some have called for neutral, third-party evaluations in order to achieve reliable, unbiased results (Innes 1999), while others—especially those directly involved with collaborative efforts—emphasize the importance of participatory evaluation, in which groups conduct self-evaluations, and/or the evaluator works closely with those involved in and affected by a project or process (Jackson and Kassam 1999; Moote et al. 2000). Many participants in collaborative natural resource management emphasize that evaluators must be intimately familiar with a process, its history, and its context, and disparage evaluation from a distance (Moote et al. 2000). At the same time, some worry that the interests of those directly involved in a collaborative venture may reduce objectivity. For this reason, other evaluation methodologies have been designed to be non-invasive and readily conducted by an outsider (d'Estree and Colby 2000). When determining how close to get to the collaborative effort under study, evaluators should consider what it is they plan to evaluate. If the focus is on environmental changes, a neutral “outside” evaluator may be preferred. For evaluations of process or human behavioral changes, however, some experts argue that the evaluator must become immersed in the situation (Patton 1986).

### ***What Is Evaluated?***

Depending on the evaluator's interests, evaluations may examine a variety of factors. Typically, they focus on either characteristics of a process, such as inclusiveness of representation and decision-making methods, or outcomes. The earliest evaluations of environmental mediation asked whether it resulted in cheaper, faster, fairer, more innovative, and longer lasting agreements than those achieved through litigation. Evaluations of these “agreement outcomes” produced mixed results (Bingham 1986; Sipe 1998). In response, Buckle and Thomas-Buckle (1986) proposed that even “failed” mediations (where no formal agreement was reached) could have positive and long-lasting outcomes, like increased understanding and improved relationships. Proponents of collaborative natural resource management now commonly identify such “social outcomes” as important evaluation criteria. Many observers contend that whether or not a collaborative effort leads to improved environmental conditions is the ultimate measure of its success (Kenney 1999; Snow 1998). Given the goals of many collaborative efforts, changes in local economic development might be another type of outcome to be assessed. Simultaneously evaluating all of these different types of outcomes is a daunting task that is rarely undertaken. Some evaluators believe that evaluating only one narrowly defined outcome at a time makes analyses tighter and more consistent (d'Estree and Colby 2000). Others stress that all outcomes of a collaborative effort must be considered together (Innes 1999).

Evaluation can also occur at many different scales. At the project level, a watershed council may want to determine whether its members were able to complete a specific stream-restoration project, the council or a third party may evaluate the

workings of the council as a whole, while a state agency may choose to assess the combined impact of all the councils it funds. Evaluations can also occur at different temporal scales: They may be ongoing, occurring in an iterative, adaptive fashion; or they may occur at specific points in time, as in Innes's (1999) distinction of mid-course, end-of-process, and retrospective evaluations.

### ***Evaluation Criteria***

Any attempt at evaluation is based on comparing reality to a set of criteria. Perhaps the simplest criterion put forth to assess collaborative efforts is the one used by Williams and Ellefson (1997), who "defined a successful partnership as a group able to attract and keep individuals engaged in partnership activities." This definition of success has obvious shortcomings, such as the lack of clear correlation between meeting attendance and tangible outcomes. The deeper one delves, the more criteria one can identify, for each of the oft-cited benefits and criticisms of collaboration can easily be turned into criteria for evaluating specific collaborative efforts. Thus, "Collaboration saves money" becomes "Did it save money?" and "Collaboration leads to local co-optation" becomes "Did it lead to local co-optation?" (See Kenney [2000] and Coughlin et al. [1999] for overviews of both benefits and criticisms.)

Goals of an evaluation must be clearly defined in order to select appropriate evaluation criteria and guide data collection. A recent study by the National Academy of Public Administration (NAPA) points out the risk of not carefully matching criteria to evaluation goals. When evaluating the effectiveness of U.S. Environmental Protection Agency and state enforcement of environmental laws, the National Academy of Public Administration found that the type of data available (numbers of permits issued, inspections conducted, enforcement actions initiated, etc.) revealed very little about the programs' effectiveness at improving environmental conditions (NAPA 2001).

As interest in evaluating collaborative efforts has grown, several lists of evaluative criteria have been generated. Criteria lists have been developed for evaluating environmental conflict resolution (d'Estree and Colby 2000), consensus-building efforts (Innes 1999), participatory processes (Poisner 1996), watershed groups (Born and Genskow 2000; Leach 2000), and integrated resource management (Bellamy et al. 1999); for assisting foundations in evaluating which collaborative efforts to fund (KenCairn 1998); and for helping environmental activists decide whether to support a given effort (Blumberg 1999). There are also lists of criteria and indicators for sustainable resource management (National Association of State Foresters 1997), community development (e.g., Baun et al. 1996), and environmental, social, and economic sustainability (Farrell and Hart 1998; Lead Partnership Group 2000). Brunson (2000) identified criteria emphasized by participants in collaborative processes. Despite the different perspectives and backgrounds of their authors, these lists share many criteria and indicators, including broad representation, consensus decision making, and feasible outcomes (Table 1).

### ***The Normative Nature of Criteria Selection and Weighting***

Commonalities among the various lists of indicators suggest that developing a single, comprehensive, and broadly accepted set of criteria might be possible. Yet the criteria relevant to a given evaluation will always vary with the reasons for the evaluation, the values and perspective of the evaluator, and the context and

**TABLE 1** Typical Evaluation Criteria

Process criteria	Broadly shared vision
	Clear, feasible goals
	Diverse, inclusive participation
	Participation by local government
	Linkages to individuals and groups beyond primary participants
	Open, accessible, and transparent process
	Clear, written plan
	Consensus-based decision making
	Decisions regarded as just
Environmental outcome criteria	Consistent with existing laws and policies
	Improved habitat
	Land protected from development
	Improved water quality
	Changed land management practices
Socioeconomic outcome criteria	Biological diversity preserved
	Soil and water resources conserved
	Relationships built or strengthened
	Increased trust
	Participants gained knowledge and understanding
	Increased employment
	Improved capacity for dispute resolution
	Changes in existing institutions or creation of new institutions

*Note.* Sources: Blumberg (1999), Born and Genskow (2000), d'Estree and Colby (2000), Innes (1999), KenCairn (1998), and Lead Partnership Group (2000).

characteristics of the collaborative effort being evaluated. Even evaluators who agreed to use a standard set of criteria would likely weight them differently and thus come up with very different evaluations of the same case. How do we weigh capacity building against results on the ground? Economic efficiency against equity issues? Short-term results against long-term precedents?

Recognizing the normative nature of criteria weighting, d'Estree and Colby (2000) have called for an objective evaluator to rank processes according to a comprehensive set of criteria, creating a matrix to which users add their own weights to come up with an overall evaluation of relative success. While conceptually appealing, such a comprehensive evaluation would require an inordinate amount of time and effort while remaining dependant on the evaluator's judgements. Whatever form an evaluation takes, researchers must acknowledge that evaluation is inherently normative, and inevitably political, for it is a forum where the public image of a collaborative effort is negotiated. Value judgments are the basis for determining what makes a process successful or unsuccessful, and different evaluators are likely to judge the same process differently. Thus we do not advocate the development of a comprehensive list of criteria. Instead, we stress that the criteria, weightings, and methods used must be made clear if evaluations are to be fairly compared to each other.

### ***Comparability of Cases***

Evaluators also need to consider the differences between collaborative efforts when selecting evaluation criteria. Despite their broad similarities, distinctions can be made between different types of collaborative efforts. For instance, the terms “collaborative” and “community-based” are often used interchangeably, despite the fact that they can refer to distinctly different activities. Community-based resource management is management by local people (Brosius et al. 1997), while collaborative refers to the involvement of multiple stakeholders (such as landowners, public agencies, interested citizens, scientists, environmentalists, and other interest groups). An effort may be both community-based and collaborative, but this need not be so. Another distinction may be drawn between a “mediation approach,” which focuses on collaborative efforts convened to resolve specific, defined conflicts, and a “partnership approach,” which focuses on the development of longer term partnerships that aim to promote ecological, economic, and social health within a defined region.

Because of differences such as these, evaluative questions, criteria, and methods need to be carefully matched to the collaborative effort being evaluated. For example, criteria based on the inclusion of all stakeholders may be essential in evaluating a collaborative body that has significant decision-making power, but may be unrealistic—and even unfair—criteria to use in judging a community-based effort that strives to give voice to disenfranchised interests in the context of a broader pluralistic forum. Similarly, a facilitator’s neutrality may be an important criterion when assessing a collaborative effort meant to mediate a specific controversy, but may be irrelevant when assessing a partnership where the convener’s vision is a key part of what keeps people working together. Each evaluator must carefully assess the nature and context of an effort when choosing which evaluative criteria to apply.

### **Standards for Comparison**

The standard against which a collaborative effort is evaluated similarly varies depending on the evaluator’s values and goals. Should a collaborative effort be evaluated against its own goals, against an ideal, or against another effort? The answers to these questions in part determine the specific evaluation criteria that are selected and the data collection and analysis methods used.

### ***Comparing a Collaborative Effort With Its Goals***

The most common form of evaluation focuses on whether and how collaborative efforts meet their identified goals and objectives. Goal setting is an important activity in many collaborative efforts, and many identify a range of social, economic, and environmental goals. In this type of evaluation, outcomes are measured and compared to targets identified in mission and goals statements and management plans. Goal evaluation is popular with participants in adaptive management ventures where goals and management applications are repeatedly reviewed and revised. Goal evaluation is also popular among organizations that provide financial or technical support to collaborative activities, and simple versions can be found in most every annual report and grant progress update.

Goal evaluations do have several limitations. First, they do not assess the appropriateness of the goals and objectives themselves, the assumptions behind them, or the process used to define them. Second, goal evaluation requires that a collaborative effort have clearly defined and uncontested goals, which may not



always be the case, especially in efforts that bring together diverse interests. As Patton (1986) points out, identifying goals can be a complex task that ultimately boils down to a question of whose goals should be used: a group's publicly stated goals, or its real goals? The funder's goals, or the staff goals? Third, goal-based evaluations run the risk of missing unanticipated (but important) outcomes (Patton 1986).

### ***Comparing Multiple Efforts***

Evaluators can choose to compare similar collaborative efforts and rank them according to selected criteria in an effort to determine which are more successful and why (for examples, see Carr et al. 1998; Duane 1997; Imperial and Hennessey 2000; Moseley 1999; Paulson 1998; Williams and Ellefson 1997). Such comparisons can show how variations in processes and in both social and ecological contexts result in different outcomes; they also broaden our focus to include both successes and failures.

When the collaborative effort being evaluated is a new decisionmaking approach, it may be compared to different types of processes that are used for similar purposes, such as different forms of planning used by the U.S. Forest Service (Gericke and Sullivan 1994) or various forms of dispute resolution (Coglianese 1997; d'Estree and Colby 2000; Sipe 1998). Such comparisons may be particularly useful to policy makers deciding which approach is most appropriate for a given situations.

As noted above, it is important to clarify that the projects or programs being evaluated share enough characteristics to make the comparison meaningful. Some researchers have attempted to identify axes of differentiation (Coughlin et al. 1999) and classify collaborative efforts (Blumenthal and Jannink 2000; Cestero 1999); such classifications are useful to evaluations that compare multiple efforts. Developing a systematic framework for understanding social institutions can also facilitate such comparative evaluations (e.g., Imperial 1999; Kenney and Lord 1999; Ostrom et al. 1994). Another approach is to break a collaborative process into its component parts and evaluate the parts separately. This method allows for comparison among collaborative efforts with like components, even if other aspects of the projects differ (Patton 1986).

### ***Comparing Collaborative Efforts to Theories***

Taking a deductive rather than inductive approach, some researchers have compared collaborative efforts to criteria derived from a theoretical construct such as communicative rationality (Duane 1997) or participatory democracy (Carr and Halvorsen 2001; Moote et al. 1997). This type of comparison allows the evaluator to look beyond the participants' goals and examine broader concepts and questions. It is built on the assumption that if the features called for by a theory are present, beneficial outcomes will be forthcoming (e.g., Duane 1997; Innes 1996). However, such assertions are only as good as the theory upon which they are based, and these links between theory and outcomes are rarely proven and subject to controversy. For example, according to many theories of collaboration, inclusion of all stakeholder groups is essential. Yet few collaborative groups meet this standard, and many have apparently achieved considerable success without it. Likewise, many theories emphasize the need for consensus decision making (where no participant opposes a group decision), yet many apparently successful collaborative efforts rely on different decision rules.

Inversely, evaluations themselves may also be used to test theories, as in Coglianese's (1999) use of an evaluatory case study to challenge the theoretical claim that consensus decision making leads to better decisions. In these cases, the evaluator investigates the strength of the association between a theory's predictions and actual outcomes. Such efforts to use evaluations to test theory will be most effective when they adhere to principles of theory testing and experimental design such as triangulation of methods and the use of refutable hypotheses.

Evaluations can also be used to construct theory. One interesting example of this is Moseley's (1999) use of case studies to develop the idea that certain kinds of social and organizational capacity must already be in place in a given community if institutional efforts to promote collaboration are to take root there. Others have studied collaborative efforts that are identified a priori as "successes" in an attempt to understand the factors that make that case a success, so that it can be replicated elsewhere (e.g., Kusel and Adler 2001). At their heart, such studies strive to build causal theories of successful collaboration.

## **Evaluation Methods**

Traditionally, evaluators have used quasi-experimental methods and multivariate statistical analyses to correlate outcomes with project characteristics or, ideally, identify and test cause-and-effect relationships between project characteristics and outcomes (e.g., Bingham and Felbinger 1989; Patton 1986). Such methods require large sample sizes of comparable entities and have difficulty accommodating the complex and dynamic nature of collaborative efforts and their contexts (Chen and Rossi 1987; Yin 1992). When such methods have been used to evaluate collaborative processes they have typically been based on structured surveys, as discussed later.

Inductive and in-depth evaluation methods, particularly ethnographic approaches, have gained credibility over time because they allow for consideration of complex interactions between variables and can be adapted when either external variables or the internal process changes. Participant observation, focus groups and workshops, document analysis, and interviews are typically used to generate the "rich" data favored in ethnographic evaluations.

Ultimately, the best method for evaluating a collaborative process will depend on the questions being asked, the scale of the evaluation, and available resources. Here, we categorize evaluation methods according to three broad classes: measuring tangible outcomes, measuring participant perceptions, and participant observation. While we address each separately, in many cases evaluators will want to use multiple methods and triangulate results to increase the validity of findings.

### ***Measuring Tangible Outcomes***

Outcome evaluation typically involves comparing actual project or program outcomes with desired outcomes. Documenting outcomes is easiest when they are readily quantified, and where there is sufficient baseline information to allow reliable comparisons over time or between cases. Measurable outcomes may be social, economic, or behavioral, and typically include indicators such as include number of acres treated, employment trends, numbers of lawsuits or appeals filed, and demand for various public assistance programs. These may focus on fairly easily defined

short-term outcomes, which facilitates the process of evaluation, or on longer term outcomes like ecological health and community well-being.

The Holy Grail for many is an evaluation showing that collaborative efforts improve a landscape's ecological health (Kenney et al. 2000). Evaluating biophysical outcomes typically relies on sampling to measure progress toward clearly defined, quantifiable objectives. Methods exist for sampling a wide array of natural resources (Goldsmith 1991; Spellerberg 1991), but significant challenges exist in applying these methods to evaluating collaborative natural resource management. The first is the previously noted problem of identifying measurable goals. Second, the variability inherent in ecological data, combined with the long time frame required for ecological changes to occur, makes identifying trends difficult. This challenge is exacerbated in cases that lack long-term data from a carefully designed monitoring program. Finally, making causal links between specific management activities and ecological trends is often problematic, as it is difficult if not impossible to isolate variables. In most cases such an evaluation is far in the future, and will only be possible where baseline surveys exist and conditions are regularly monitored. Similar challenges face those trying to evaluate socioeconomic outcomes like community well-being or economic sustainability.

Outcome evaluations are often seen as more objective than those based on participant's opinions (discussed later), but they give little insight into perceptual factors like mutual learning, perceived fairness of the process or outcome, and conflict abatement. Outcome evaluation has also been called a "black box" method, because it often does not allow evaluators to determine which variables caused the outcome (Patton 1986).

### *Measuring Participants' Perceptions*

Perhaps the most common data-gathering method used to evaluate collaborative conservation is to ask participants about them. Typically, surveys or semistructured interviews ask respondents to identify and assess an effort's outcomes, the factors that led to those outcomes, and the appropriateness of the processes used. The simplest surveys focus on a single effort at one point in time (e.g., Daniels and Walker 1996; Harmon 1999), but surveys that look at numerous cases are becoming increasingly common (e.g., Carr et al. 1998; Kenney et al. 2000; Leach 2000; Paulson 1998; Selin et al. 2000; Susskind et al. 2000; Williams and Ellefson 1997). Participant evaluations are used to identify stakeholder attitudes, opinions, and relationships; reduced conflicts between parties; increases in social capital; and other social changes.

Single-shot surveys and interviews have been criticized for failing to capture changes in perspectives over time. Longitudinal studies can address this weakness by surveying people before, during, and after they participate in a collaborative effort. This measures both participants' opinions about the process and its outcomes, the way those opinions change over the course of the process, and, if adequate controls are used, the degree to which the collaborative process is responsible for those changes. In many cases, participants themselves may not have noticed or articulated such changes.

Common variations on the participant-survey approach include group self-assessment activities such as focus-group discussions, group ranking exercises to rate outcomes and alternatives, developing flowcharts of project impacts, and mapping both landscape features and abstract concepts (as in Venn diagrams of relationships between different organizations) (Chambers 1997). These are often

combined into participatory evaluation workshops used for internal program reviews, but have potential for other applications (Innes and Booher 1999; Jackson and Kassam 1999).

Data based on people's perceptions are often seen as less appropriate for measuring tangible outcomes, due to their subjectivity and reliance on respondent's memories. The participant survey approach has also been criticized because results are limited to the perspectives of those who participate in the study. This is especially problematic in studies looking at numerous cases where it is logistically necessary to limit the number of informants per case. As Freeman House (1999) notes in his book on collaboration in the Mattole watershed, "Talk to anyone who's been involved in the community endeavor described here and you'll hear a whole different set of stories and, likely, a whole different interpretation of what they might mean." Leach (2000) found that assessments based on the perceptions of group coordinators differed substantially from those based on responses of all group members, and that different groups of stakeholders could differ significantly in their assessments of the same efforts, indicating that evaluators should strive to include the views of as wide a cross section of participants as possible. Most surveys have also ignored the opinions of parties who did not directly participate in a process but were affected by it. Where resources allow, identifying and surveying affected nonparticipants (and lapsed participants) may address this shortcoming.

### ***Process Evaluation***

Evaluations that ask process questions like how well a project or program is functioning, how participants are recruited, or how decisions are made require that evaluators "become intimately acquainted with the details" of a collaborative effort (Patton 1986). In-depth interviews and participant observation are preferred process evaluation methods, although systems analysis, an iterative method that involves mapping interrelationships between components of the natural, social, and built environment, also holds promise.

Participant observation is distinguished by the role of the evaluator, who has extended contact with participants (on the order of months or years) (e.g., Duane 1997; Moote et al. 1997; Moseley 1999; Smith 1999). Such studies are often conducted by participants in the collaborative process or researchers taking an anthropological approach. Participant observation is favored by many evaluators because it provides the richest data on both process and context characteristics and permits in-depth analysis of the relationships linking process variables to outcomes. Participant observation is favored in inductive research and is well suited to theory building, but can be quite time-consuming.

### **Coordinating Research Efforts**

In-depth case studies are favored by many researchers because they permit extensive analysis of any number of context and process characteristics. Unfortunately, case studies are time-consuming and evaluators typically tackle at most two or three at a time. This limits the generalizability of their results. The widespread desire to address broader questions indicates the obvious need for evaluations based on larger samples. These can be obtained through surveys of multiple cases or by conducting meta-analysis of existing case studies.

Surveys of like cases can provide analyses with generalizable results, but they are not always the best tool: They may fail to account for characteristics not included in

the survey and, when applied to numerous cases, they are typically completed by at best a few respondents for each case. Where typically the individual respondent is the unit of analysis, most questions about collaborative efforts treat the group or effort as the unit of analysis. This challenge can be addressed by surveying a representative sample of participants and nonparticipants for each case, but doing so greatly increases the logistical challenges. Some evaluators have used surveys in conjunction with more in-depth analysis of a few of the cases surveyed (e.g., Paulson 1998), which allows for more informed interpretation of the survey results.

For many evaluative questions, meta-analysis of existing case studies may prove to be more effective. When data to address specific questions are not extant in existing case studies, coordinated case studies conducted by research teams may be needed to develop a sufficiently large sample. A surprising amount of evaluation work—including hundreds of case studies—already exists, but it remains spread through many disciplines with much buried in the gray literature. Meta-analyses can synthesize findings from these studies, but legitimate meta-analysis requires comparable data. Here again we see the importance of making research questions, bases for comparison, criteria and their weightings, and research methods explicit. Meta-analysis is most effective when the questions asked are clearly defined and relatively narrow so that they apply to specific components of cases rather than can readily be broken out and compared. To date, few such meta-analyses exist, although Leach and Pelkey (2001) and Kenney (2000) are beginnings.

## **Conclusion**

As proponents of collaborative approaches to resource management, we are unnerved by the ways in which these processes have been portrayed as a cure-all. We are similarly troubled by knee-jerk criticisms of collaborative processes that are based on an opposition to collaboration in principle rather than evaluation of specific processes and outcomes. Thoughtful evaluation of the effectiveness of different collaborative processes is central to understanding what can and cannot be expected of such processes and how they can be integrated with existing institutions.

Certain forms of evaluation will play key roles. Participatory evaluations driven by collaborative efforts themselves are needed to determine progress toward goals, provide feedback to guide future actions, and identify larger scale issues that impact specific efforts. Surveys, coordinated case studies, and meta-analyses can play an important role in illuminating these larger scale issues and are best used to address specific questions with broad import for policy-making and management. Building networks connecting researchers, participants in collaborative efforts, policymakers and critics will greatly facilitate identifying relevant research questions and applying the results to management. Detailed case studies also have a role to play in developing theory about collaborative efforts and identifying specific issues and dynamics that warrant further study. Despite their popularity, efforts to evaluate the “success” of collaborative approaches in general and to develop cookbooks for collaboration are likely to be less useful.

Developing truly objective means of evaluating collaborative efforts is impossible. This said, if evaluators make explicit their motives for an evaluation, criteria used and their relative weightings, and data collection methods, we can compare, synthesize, and learn from them. Such synthesis is the next step in addressing the many questions being asked about collaborative natural resource management.

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