Stakeholder Partnerships as Collaborative Policymaking: Evaluation Criteria Applied to Watershed Management in California and Washington

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Abstract

Public policymaking and implementation in the United States are increasingly handled through local, consensus-seeking partnerships involving most affected stakeholders. This paper formalizes the concept of a stakeholder partnership, and proposes techniques for using interviews, surveys, and documents to measure each of six evaluation criteria. Then the criteria are applied to 44 watershed partnerships in California and Washington. The data suggest that each criterion makes a unique contribution to the overall evaluation, and together the criteria reflect a range of partnership goals—both short-term and long-term, substantive and instrumental. Success takes time—frequently about 48 months to achieve major milestones, such as formal agreements and implementation of restoration, education, or monitoring projects. Stakeholders perceive that their partnerships have been most effective at addressing local problems and at addressing serious problems—not just uncontroversial issues, as previously hypothesized. On the other hand, they perceive that partnerships have occasionally aggravated problems involving the economy, regulation, and threats to property rights.
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INTRODUCTION

Stakeholder partnerships are an increasingly popular approach to collaborative policymaking and implementation. Their growing popularity is manifest in the rising number of partnerships,[1] increasing support from within federal and state agencies,[2]

[1] Kenny et al. (2000) identified 346 watershed partnerships west of the Mississippi River. However, this is probably an undercount; the authors have found about 150 watershed partnerships in California alone. The vast majority of these partnerships were less than 10 years old. Watershed partnerships are also common in the eastern United States, as well as Canada and Australia (Leach and Pelkey, 2001).

[2] Several federal agencies have issued guidebooks that advocate decentralized, consensus-oriented policymaking. Examples include the U.S. Department of Housing and Urban Development's *Community-Building Coming of Age* (Kingsley, McNeely, and Gibson, 1997), the Environmental Protection Agency's (1999) *Community-Based Environmental Protection*, and the National Oceanic and Atmospheric Administration's *Watershed Restoration: A Guide for Citizen Involvement in California* (Kier, 1995). Nine federal departments and agencies have endorsed the Clean Water Action Plan (EPA and USDA, 1998), which calls for "a new cooperative approach to watershed protection in which state, tribal, federal, and local governments, and the public first identify the watersheds with the most critical water quality problems and then work together to focus resources and implement effective strategies to solve those problems." The U.S. Forest Service and Department of the Interior have called for "A greater role for citizen stakeholders in completing watershed assessments, monitoring pollution sources, and planning and implementing restoration efforts through collaborative stewardship approaches" (Federal Register, 2000).

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and increasing amounts of funding earmarked for administering local partnerships or for projects planned and implemented under the auspices of local partnerships.[3]

Given the promises and pitfalls of collaborative policymaking, research is needed to document the types of policy questions partnerships are addressing, and to assess what partnerships have accomplished thus far. The stakeholders that participate in partnerships need to know whether the time and effort they invest in collaboration is likely to produce tangible results. The agencies and foundations that finance partnerships need to understand the risks and opportunities they entail. A prerequisite for answering these questions is a set of valid and measurable evaluation criteria.

This paper begins by formalizing the concept of a stakeholder partnership, which has appeared dozens of times in the recent literature on environmental and natural resource planning (Leach and Pelkey, 2001), and occasionally in the fields of international development (e.g., Gonzales, Lauder, and Melles, 2000; Meadowcroft, 1999), urban infrastructure (e.g., Ogu, 2000), solid waste management (e.g., Halla and Majani, 1999), public housing (e.g., Kingsley, McNeely, and Gibson, 1997), and labor standards (e.g., Bobrowsky, 2000).

The following study is one of the very few that has grappled with both the practical and conceptual challenges of systematically measuring multiple dimensions of success for multiple stakeholder partnerships (Beierle and Cayford, 2002; Huntington and Sommarstrom, 2000; Margerum, 1999). The analysis yields a detailed account of what watershed partnerships are achieving in California and Washington—and how long it takes to reach each benchmark of success—including a discussion of which types of watershed problems are most amenable to collaborative planning.

STAKEHOLDER PARTNERSHIPS DEFINED

Stakeholder partnerships consist of representatives from private interest groups, local public agencies, and state or federal agencies, who convene as a group, periodically and indefinitely, to discuss or negotiate public policy within a broadly defined issue area. Table 1 compares stakeholder partnerships with three related types of collaboration, which share some, but not all of the traits of partnerships. Unlike other forms of participatory policymaking, stakeholder partnerships combine a broadly defined issue area, participation by multiple levels of government, and indefinite duration.

For each entry in Table 1, the last two columns ("participants" and "stages of the policy cycle") are functional responses to the breadth of the issues that the forum addresses. For example, although all four types of forums can be used in a wide range of policy issues, partnerships are distinguished by their use of an integrated approach to addressing a suite of related problems defined by a broad topical theme (e.g., land use or public service provision), and in most cases a geographic theme as well (e.g., a county or watershed). Partnerships strive to reach agreement on one or more specific policies or projects, and may simultaneously pursue intermediate goals such as research, education, public outreach, trust-building, and grant writing. To achieve these goals, partnerships typically meet about once per month over an indefinite number of years. This broad scope and duration allows partnerships

[3] State and federal programs have recently channeled millions of dollars through watershed partnerships. Examples include EPA's Section 104(b)(3), 205, and 319 grants; the Department of Agriculture's EQIP program; California's CALFED program and Propositions 12, 13, and 204; Washington state's Watershed Planning Act of 1998 (about $4.5 million annually), and the Massachusetts Watershed Initiative, which funds full-time partnership coordinators in each of the state's 27 watersheds.

Table 1. Traits of stakeholder partnerships and other related forms of participatory policymaking.

	Issues	Participants	Stages of the Policy Cycle
Stakeholder partnership	Multiple issues united by a common theme, addressed sequentially or simultaneously.	Interest groups, citizens, and multiple federal, state, and local agencies. Meetings typically open to the public.	Full cycle (problem definition, planning or decisionmaking, implementation, assessment). Indefinite duration.
Advisory committee	A specific project or program conducted by a public agency or private enterprise.	Interest groups, technical experts, and /or public agencies, Selected by the sponsor.	May address any or all stages, over an extended period of time, depending on the scope of the sponsor's project or program.
Public hearing	A specific project proposed by an agency or private developer .	The project proponent, interest groups, citizens, and one or more permit-issuing agencies. Meetings open to the public.	Planning stage only. Timing is often driven by statutory deadlines. Disbands after the plan is finalized.
Negotiated rule making	A specific proposed regulation.	Affected interest groups. Selected by the one,rule-making agency.	Rule-making stage only. Disbands after the rule is finalized.

to address the entire policy cycle including problem definition, policy adoption, implementation, and assessment. A final consequence of their topical breadth is that most partnerships strive to include all local, state, and federal agencies that may have relevant regulatory or service-related responsibilities.

The other three types of forums, by contrast, focus on a specific project, program, or regulation. Government participation is usually limited to one or more sponsoring agencies. Advisory committees and negotiated rulemaking processes typically limit participation to a set of interest-group representatives invited by the sponsoring agency, whereas partnerships (and public hearings) typically welcome participation by the public at large.

Throughout the paper, the term stakeholder refers to any individual or organization interested in a particular policy issue. Partnerships frequently include local citizens, landowners, businesses, national or local advocacy groups, trade organizations, and multiple government entities including federal, tribal, state, and local regulatory agencies, service agencies, and elected officials. Given such diversity, internal conflict (latent or obvious) is a defining characteristic, and partnerships should be distinguished from advocacy groups or other relatively homogenous coalitions of stakeholders who share a common vision from the start.

DATA

In 1999 and 2000, the authors conducted case studies of 44 watershed partnerships in California and Washington. The field research began with an effort to identify all partnerships in California that were active at any point between 1995 and 1999, including partnerships that are now defunct.[4] To be included in the sampling frame, a partnership had to meet at least four times per year, and had to focus on managing one or more streams, rivers, or watersheds. To ensure an adequate diversity of stakeholders, each partnership had to include: at least one state or federal official; at least one representative of local government—either a general-purpose city or county, or a special district (such as water or school district); and at least two opposing interests, such as a resource user and either a regulating agency or environmentalist.

This search revealed a population of 150 partnerships in California, from which 35 were randomly sampled with geographic stratification, such that no more than two partnerships were selected from a single watershed (Table 2).[5] In Washington, nine watersheds were randomly selected, and one partnership from each was sampled.[6] Because the selection process was random and the sample size is relatively large, the overall results should be representative of watershed partnerships in the two states.

The sample includes nine partnerships that had disbanded by the time of the study. Three of these disbanded because they had achieved their main objectives. The other six disbanded after their negotiations ended in stalemate.

For each selected partnership, three to six key participants were interviewed, relevant documents such as watershed plans and meeting minutes were analyzed, and a survey was mailed to all participants sufficiently knowledgeable about the partnership to complete at least part of the questionnaire, plus several knowledgeable non-participant observers.[7]

The three to six interviewees were selected to represent all the major factions within the partnership. In most cases, this included at minimum the partnership's coordinator plus one key participant from a pro-environment perspective and one participant from a pro-development perspective.

For the survey, the name of the participants and knowledgeable observers were obtained during the interviews. The smallest partnership had six survey recipients,

[4] California partnerships were identified through several means. First, a brief questionnaire was mailed to a random sample of District Conservationists with the Natural Resources Conservation Service, directors from local Resource Conservation Districts, field personnel of the California Department of Forestry and Fire Protection, and University of California Cooperative Extension specialists. Second, the authors searched the Natural Resource Projects Inventory, a database housed in the UC Davis Information Center for the Environment. Third, Internet search-engines were used to find relevant web pages. Fourth, the authors asked interviewees from each partnership to name other partnerships in their region. Finally, in cases where there was any doubt about whether a suspected partnership satisfied our operational definition, the authors called a partnership representative to obtain further information. A similar process was used for Washington.

[5] California was partitioned using Hydrologic Unit Code (HUC) watersheds defined by the United States Geological Survey. There are 160 HUCs in the state, ranging from 35 to 9000 square miles.

[6] Washington was partitioned using the 62 Water Resource Inventory Areas, which range from 140 to 3000 square miles.

[7] In a separate analysis, the authors find that the perceptions of participants and non-participants are similar in terms of the mean response for many questions, but that participant's views tend to be more extreme—both high and low (Leach, 2002).

Table 2. Random sample of watershed partnerships.

CALIFORNIA	
Alameda Creek Watershed Mngt. Program	Santa Ana River Watershed Group
American River Watershed Group	Scott River Watershed Council
Butte Creek Watershed Conservancy	Shasta Tehama Bioregional Council
Cache Creek Stakeholders Group	Smithneck Creek CRMP
Central Sierra Watershed Committee	Sonoma Marin Animal Waste Committee
Cosumnes River Task Force CRMP	South Fork Dialogue
Dos Palmas Cooperative Mngt. Cmte.	South Fork Trinity River CRMP
Dry Creek CRMP	Stanislaus Stakeholders
Garcia River Watershed Advisory Group	Stony Creek Task Force & Tech Team
Goose Lake Fishes Working Group	Tuolumne River Technical Advisory Cmte.
Los Angeles & San Gabriel R. W'shed Council	Watsonville Sloughs Water Res. Mngt. Plan
Marin Coastal Watershed Enhancement Project	Yuba Watershed Council
Mokelumne River Watershed Group	
Navarro River Watershed Advisory Group	WASHINGTON
Northern Klamath Bioregional Group	Cedar River Council
Oakhurst River Parkway	Douglas County Watershed Planning Assoc.
Panoche-Silver Creek CRMP	Entiat Landowner Steering Cmte. and TAC
Pine Creek CRMP	Jefferson County Water Resources Council
Russian River Watershed Council	Padilla Bay Demonstration Farm Committee
San Francisquito Creek CRMP	Samish Watershed Mngt. Committee and IRC
San Joaquin River Management Program	Stillaguamish Clean Water District
San Joaquin Valley Res. Conservation P'ship	Tolt Fish Habitat Restoration Group
San Juan Creek Study Mngt. Team	Wenatchee River Watershed Mngt. Cmte.

and the largest had 76. The resulting data set[8] includes 157 interviews and 770 surveys (of 1185, for a response rate of 65 percent). Response rates for individual partnerships ranged from 45 to 88 percent.[9]

RESULTS: PARTNERSHIP STRUCTURE AND FUNCTION

Participants and Their Motives

The majority of participants can be characterized as resource users, environmentalists, or agency officials (Table 3).[10] On average, partnerships also include representatives from Native American tribes (1 percent of participants), local elected offi-

[8] To avoid data-entry errors, all the data from the surveys and interviews were entered twice, and any discrepancies between the two rounds were corrected before analyzing the data.

[9] Both the semi-structured interviews and the questionnaire were designed to collect information needed to test various theory-driven hypotheses, and to address other issues recommended by the 20-member advisory committee, which consisted of representatives from watershed-related agencies and interest groups. To ensure that the questionnaire reflected issues and terminology relevant to a typical partnership, the questionnaire was not finalized and distributed until several dozen interviews had been completed. The interview script and questionnaires were essentially the same for each partnership, although the cover art and language of the questionnaires were cosmetically tailored to reflect each partnership's name and location.

[10] To avoid Simpson's paradox, in which results for individual samples of unequal size may contradict aggregate results, the authors first calculated percentages within each partnership, and then averaged across partnerships.

Table 3. Motives for participating, grouped by major stakeholder categories, for the average partnership (n = 44).

	Federal Agencies	State Agencies	Local Agencies	Resource Users	Environmentalists	All stakeholders
Proportion of all participants	15%	15%	25%	16%	13%	100%
Motives for participating*						
To improve the watershed.	93%	94%	85%	80%	98%	88%
To help achieve my organization's goals & objectives.	83	85	82	65	84	78
To educate myself about watershed issues.	55	49	67	72	68	61
To report back to my organization about what the partnership is doing.	55	56	69	50	58	56
To prevent the partnership from achieving undesirable changes in law or policy.	19	22	31	75	50	37
To meet interesting or important people.	20	28	22	23	28	23
To protect my financial interests.	3	1	19	60	7	20

* Percentage of respondents for whom the reason is important or very important

cials (2 percent), unaffiliated watershed residents (3 percent), plus technical consultants, university researchers, educators, and freelance facilitators (7 percent).

With a few notable exceptions, motives for participating are comparable across the various categories of stakeholders (Table 3). The primary motivation for all categories is, quite nobly, "to improve the watershed." Relatively few stakeholders identified social or professional networking as an important motive. Compared with other stakeholders within a given partnership, resource users tend to participate defensively (Friedman tests, $p < 0.001$), with 60 percent seeking to protect their financial interests, and 75 percent seeking to "prevent the partnership from achieving undesirable changes in law or policy."

Faith in the Partnership Approach

Participants tend to be very supportive of a collaborative approach to policymaking. Within the self-selected population of stakeholders who join partnerships, 84 percent agree or strongly agree that, "The best strategies for resolving watershed issues involve consensus-based processes." The other 16 percent participate despite their reservations—an apparent concession to the influence partnerships can have on public policy. Critics assert that partnerships consume excessive amounts of time and effort, create new and unnecessary layers of bureaucracy, divert attention away from important problems, give false legitimacy to parochial deliberations when regional or national interests are at stake, and reward government agencies for making popular decisions rather than sound decisions (Coggins, 1999; Coglianese, 1999; Kenney, 2000; McCloskey, 1996).

By comparison, respondents were less enthusiastic about conventional approaches, including "reliance on each agency's legal mandate and court review" (27 percent supportive), "reliance on tradable permits for water, fish catch, development, etc." (20 percent supportive), and "allowing private property owners to manage their land as they see fit" (24 percent supportive).

Participation and Decision Rules

Partnership meetings are typically open to the public. Only 1 of the 157 inter viewees believed that a partnership had actively excluded a particular stakeholder. On the other hand, not all invited stakeholders actually participate. In 86 percent of partnerships, the interviewees could name at least one relevant stakeholder category that did not send a representative to partnership meetings.

Of the 44 partnerships studied, 93 percent used a consensus-based process for all or most decisions. Consensus was in the form a unanimous vote (11 percent), consensus among a subset of main participants (11 percent), or informed consent (82 percent)—i.e. participants can veto decisions they strongly oppose.[11] Six partnerships (14 percent) required a majority or super-majority vote for some or all decisions. In seven partnerships (16 percent), at least one interviewee thought the decision rules were somewhat unclear.

Consensus in this context means only that partnerships cannot force stakeholders to act against their will. A partnership may help identify previously unrealized areas of agreement, or mutually agreeable trades or compromises, but because participation is voluntary, the partnership cannot prevent individual members from carrying out their otherwise legal or legally mandated activities. In most cases it is the members, and not the partnership itself, that implements each of the agreed-upon projects or policies (Sinclair and Smith, 1999, p. 125). To enforce agreements, partnerships typically must rely upon peer pressure and the moral authority of the partnership (Rieke and Kenney, 1997, p. 51).

Three partnerships (7 percent) took the form of a non-profit corporation including both a board of directors plus a broader "stakeholders group." A non-profit corporation can accept and appropriate grant money, whereas most partnerships rely upon a relatively neutral member organization, such as a county agency, to apply for and administer grants on behalf of the partnership. In an incorporated partnership, the right to vote on budgetary matters is limited to the directors, but the larger consensus-building (some would say, cajoling) function of the stakeholders group is much the same as in an informal partnership.

Funding

Three-quarters of partnerships received outside funding from a government agency or private foundation. Among those with funding, the median total received from all sources since inception was $320,000. Securing money from sources external to the partnership avoids the problem of identifying which stakeholders will pay for a mutually beneficial project. Funding institutions often look favorably upon partnership-initiated grant applications because these projects, having been endorsed by all major stakeholders, will probably avoid the delays and litigation that often accompany local opposition. Funders may also presume that a project is more tech-

[11] Totals do not sum to 93 percent because partnerships may use different rules for different types of decisions.

nically sound if it draws upon the expertise of multiple segments of society (Stern and Fineberg, 1996).

METHODS: EVALUATION CRITERIA

The breadth and duration of stakeholder partnerships creates difficulties for the evaluation researcher who must choose one or more yardsticks for measuring success. Partnerships often pursue multiple activities over a span of many years to address an array of social, economic, and ecological issues. One reasonable response to this complexity—which Connell et al. (1995) explore in their two volumes on evaluating community initiatives—is to track multiple dimensions of success. An ideal set of criteria would reflect every goal of each partnership, and at the same time, each criterion would be reliably measured (Rossi and Freeman, 1989). The policy evaluation and watershed management literatures offer several examples of multidimensional definitions of success from which the authors have borrowed liberally (Beierle, 1998; Beierle and Konisky, 2000; Bellamy et al., 1999; Griffin, 1999; Innes, 1999; Innes & Booher, 1999; Moote, McClaran, and Chickering, 1997; Rowe and Frewer, 2000; Selin and Chavez, 1995; Syme and Sadler, 1994; Toupal and Johnson, 1998). Rather than an exhaustive list of criteria, a manageable set of six disjoint criteria have been selected that together can adequately measure partnership success.

Following Connell and Kubisch (1998), measures of outcomes, actions, and agreements have been included, specifically, measures of: perceived effects of the partnership on specific problems in the watershed; perceived effects of the partnership on human and social capital; the extent of agreement reached among the stakeholders; implementation of restoration projects; monitoring projects; and education and outreach projects.

These six criteria were chosen, first, because the ultimate success criterion for watershed partnerships is whether they actually improve water quality, water supply, or other conditions in the watershed. Unfortunately, very few partnerships have collected the baseline and post-project monitoring data that are necessary for ascertaining such effects. Most partnerships have access to some information about whether conditions in the watershed are improving or declining, but attributing these trends to the activities of the partnership is usually not possible—at least not in a conclusive, statistically significant sense. The lack of data is probably due to a combination of insufficient funding, lack of relevant expertise within some partnerships, and the fact that most partnerships are relatively young (median age = 46 months) whereas ecological and socioeconomic change evolves over many years. Because the necessary studies and data are unavailable for the vast majority of partnerships, it was not possible to provide a meta-analysis of partnership effectiveness with respect to watershed conditions. Therefore, as a surrogate for actual effects, the stakeholders' perceptions of their partnership's effect were measured. Perceptual survey data were also used to measure whether each partnership has improved its participants' stores of human and social capital—a criterion that many watershed participants and scholars argue is both good in itself and necessary for long-term policy implementation and conflict resolution (Leach and Pelkey, 2001).

To measure the remaining four criteria, factual data were compiled from interviews and partnership documents, thus providing a relatively objective account of what each partnership implemented or agreed to do. The third criterion is the level of agreement reached. To implement projects, partnerships must agree to specific actions or a comprehensive management plan. The fourth criterion is restoration projects, which are the main policy instruments through which part-

nerships improve watershed conditions. A fifth type of policy output, which scholars and stakeholders increasingly view as essential for adaptive management, is for partnerships to monitor and assess their own effects on watershed conditions (Huntington and Sommarstrom, 2000; Yaffee et al., 1996). Finally, education and outreach projects are another means through which partnerships can promote human and social capital, and ultimately change behavior to benefit watershed conditions.

Several criteria were omitted that could be construed as obstacles to other forms of success. For example, institutional maturity (as evidenced by bylaws, officers, or budgets) can be viewed as an intermediate form of success. However, several interviewed stakeholders expressed ideological objections to bureaucratic partnerships, and one stakeholder suggested that procedural rules create opportunities for disgruntled participants to undermine the process through appeals on technicalities. Institutional longevity could similarly be considered a type of success, but longevity (or time) can also be viewed as a cost of cooperation rather than a benefit. Finally, a democratic or otherwise fair set of procedural rules would have inherent value (Beierle, 1999; Rowe and Frewer, 2000), but critics argue that broad participation and consensus decision-making can impede timely, technically sound planning (Coglianese, 1999; Kenney, 2000).

Perceived Effects on Watershed Conditions

The ultimate measure of success is a partnership's effects on physical, biological, or social aspects of watershed-related problems. Measuring implementation alone is not sufficient because well-executed projects can fail to have the desired consequences due to poor design or unforeseeable events (Mazmanian and Sabatier, 1989). In aquatic ecosystems, for example, it is often difficult to identify the root causes of the problem, and acts of nature such as fires, floods, or drought often undo restoration projects (Kondolf and Micheli, 1995).

Unfortunately, few partnerships conduct the long-term pre-project and post-project monitoring required to separate the partnership's effects from the effects of other forces within or outside the watershed, or from natural fluctuations. Given the lack of available objective data on effects, this study relies upon a proxy measure—the respondents' perceptions of their partnership's actual effects.

The questionnaire asked survey respondents to evaluate their partnership's effects on 12 conditions ranging from impaired water quality to threats to Native American treaty rights (Figure 4). The scale for each evaluation ranged from -3 (the partnership made the problem much worse) to +3 (much better), centered at 0 (no net effect). Respondents were also asked to assess, on a scale from 0 to 100, the seriousness of each condition in their watershed. To develop an overall score for each respondent,the 12 effects were weighted by the corresponding seriousness of the condition.[12] The final index was calculated by averaging across all respondents for each partnership. Weighting each of the 12 assessed effects by the seriousness of the problem allows each respondent to effectively tailor the uniform list of issues to their own watershed. In this way, the assessments are fairly comparable across partnerships, even if different partnerships face different types of issues.

[12] "Perceived effect on watershed conditions" for respondent

$$n = \left(\sum_{C=1}^{12} I_C \bullet S_C\right) \Big/ \sum_{C=1}^{12} S_C$$

where I_C = perceived effect on condition C, and S_C = perceived seriousness of condition C.

Perceived Effect on Human and Social Capital

Another dimension of success is the extent to which a partnership has improved its stakeholders' capacity for achieving future, tangible, accomplishments. Partnerships have the potential to promote greater knowledge, new interpersonal relationships, and mutual understanding, which are believed to be important ingredients for fruitful collaboration (Innes, 1999; Innes et al., 1994; Leach and Pelkey, 2001; Ozawa and Podziba, 1997). As conceptualized by Coleman (1988) and Putnam (2000), personal networks and relationships are key components of social capital, and pertinent knowledge is a key component of human capital. Both social and human capital can promote collective action among autonomous actors, such as the coordination that occurs in stakeholder partnerships. This measure is particularly appropriate for young partnerships that have not had time to attain other dimensions of success, or for partnerships whose progress has been impeded by especially high levels of initial conflict.

This criterion was measured by asking survey respondents to assess, on a seven-point Likert scale, whether the partnership has given them: new long-term friendships or professional relationships, a better understanding of other stakeholders' perspectives, and a better understanding of the physical or biological processes in the watershed. Each respondent's answers to the three questions were averaged, and the resulting scale was then averaged across all respondents for a given partnership to create a mean measure of the partnership's effect on social and human capital. The empirical justification for combining these three questions is that they scale reliably (Chronbach's $\alpha = 0.74$), and the factor loadings are quite high ($r = 0.82, 0.84, 0.79$), respectively.

In a longitudinal study, one could directly estimate each partnership's effect by measuring actual changes in knowledge and networks over time. In a cross-sectional study, however, one must rely on respondents' perceptions of the partnership's effect.

Level of Agreement Reached

Before projects can be implemented in the name of the partnership, participants must forge agreements about what should be done. The most basic agreements simply outline the partnership's goals or principles. In more advanced agreements, members of the partnership pledge to implement specific actions. Some partnerships are able to write and adopt a comprehensive watershed plan that integrates many specific projects or policy positions.

This dimension of success was measured using interviews and relevant documents to determine whether each partnership had achieved the following levels of agreement, which constitute an ordinal five-point scale: agreed to meet to identify issues, goals, or actions; agreed on which issue(s) to discuss or address; agreed on general goals or principles; agreed on one or more implementation actions (relatively limited and un-integrated); agreed on a relatively comprehensive watershed management plan with specific projects or proposals.

Restoration Projects

A central measure of success is the extent to which the members of a partnership have followed through on their commitments—regardless of whether these efforts have had sufficient time, fortune, or capability to achieve their intended purposes. In watershed-based partnerships, stakeholders frequently agree to implement on-

the-ground restoration projects designed to improve local environmental or social conditions. This dimension of success was measured by compiling lists of attempted projects while accounting for variation in scope from one partnership to the next. The interviews and partnership documents were used to evaluate progress on the four main types of restoration projects that watershed partnerships pursue:

1. Abatement or prevention of point or nonpoint sources of pollution.
2. Modifications to in-stream flows or water allocation.
3. Stream channel projects (restoration of vegetation, morphology, or biota).
4. Changes in land-use designations (through purchase, easements, zoning, etc.).

The resulting index is detailed in Figure 1. For each attempted activity, one point was credited; then 0 to 4 points were added according to how much had been completed; then 1 to 5 points were added depending on the geographic scope of the project. This sum was multiplied by either 1 or 0.5 depending on whether the partnership deserved full or partial credit for the project's fruition. Finally, these figures were summed across all four types of projects to create an index ranging between 0 and 40.

When constructing indexes to generate ordinal data, the choice of which items to include in the index is generally much more important than the choice of weights (Miranda, Miller, and Jacobs, 2000). For example, the authors found that multiplying the scope and completion scores, instead of adding, produces an index highly correlated with the additive index described above (Spearman's $\rho = 0.85$).

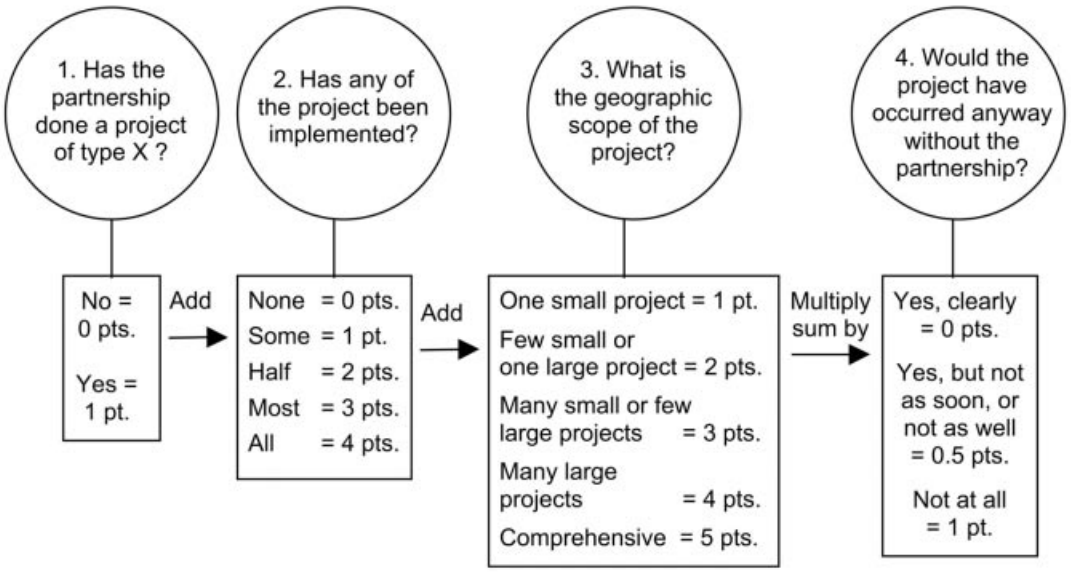

Figure 1. Index of restoration projects. The formula, based on data from interviews and documents, is repeated and summed for four types of restoration projects.

Monitoring Projects

A fifth dimension of success is a partnership's commitment to collecting sufficient information to assess its effect on targeted watershed conditions. Ideally, the partnership should collect both pre-project baseline data and post-project outcome data. Partnerships should also monitor whether restoration projects are being implemented as planned. Monitoring and assessment are essential for adaptive management—the process of adjusting course based on recent experience (Ewing, Grayson, and Argent, 2000).

Interviews and documents were used to determine whether each partnership had engaged in any pre-project baseline monitoring (3 points), post-project monitoring (2 points), or field-compliance monitoring—i.e. "Were projects properly carried out?" (1 point). The combined index ranges between 0 and 6.

Education and Outreach Projects

Partnerships frequently decide that educating the general public or the stakeholders themselves is a necessary part of the solution. For example, a partnership might organize a workshop to train local landowners to become better stewards of the water and land. Outreach projects can also help to build community support for partnerships, which are a rather novel and unfamiliar form of governance (Huntington and Sommarstrom, 2000). By helping stakeholders reach consensus on the causes and consequences of various watershed problems, educational activities within the partnership (such as expert guest lectures) can facilitate future agreements on how to improve the watershed. Finally, education is also relatively easy to do, and thus provides a benchmark for evaluating young partnerships.

Education and outreach was assessed by recording whether each partnership had conducted any of 10 types of activities (Figure 9). It was assumed that each partnership might reasonably consider any of the 10 types of activities as a means for pursuing its goals and objectives. One point was credited for each activity to generate a 10-point scale. These data were drawn from the interviews and partnership documents.

RESULTS: THE IMPORTANCE OF MULTIPLE MEASURES OF SUCCESS

Multiple measures are a hallmark of good evaluation research (Weiss, 1972, p. 36), but how many evaluation criteria are necessary to adequately measure the success of a watershed partnership? If two criteria are highly correlated across all partnerships, then the two criteria are redundant, and one can be dropped.[13] The authors have aimed to strike a balance between an exhaustive list and a manageable number of disjoint criteria. Among the six criteria measured, none of the 15 bivariate correlations exceeds 0.72 (Table 4), suggesting that no one criterion accounts for more than about 52 percent of the variation in any other criterion. This lack of redundancy supports the conclusion that all six criteria are necessary to adequately characterize partnership success.

[13] As a seventh evaluation criterion, survey respondents were asked to assess (on a single seven-point agree-disagree scale) whether the partnership had achieved its goals. The authors dropped this measure because it correlates strongly with the index of perceived watershed effects ($\rho = 0.80$), and because it provides none of the detailed information contained in the index. The high correlation suggests that, when people assess whether a partnership has achieved its goals, they may well be evaluating the partnership on multiple dimensions, weighted for perceived importance (just as our perceived effects index does).

Table 4. Spearman's correlations among evaluation criteria.

	Perceived effect on watershed	Perceived effect on human & social capital	Restoration projects	Education projects	Monitoring projects	Level of agreement
Perceived effect on watershed.	1	0.55	0.50	0.35	0.52	0.45
Perceived effect on human & social capital.	0.55	1	0.50	0.37	0.52	0.47
Restoration projects.	0.50	0.50	1	0.37	0.72	0.65
Education projects.	0.35	0.37	0.37	1	0.45	0.42
Monitoring projects.	0.52	0.52	0.72	0.45	1	0.69
Level of agreement.	0.45	0.47	0.65	0.42	0.69	1

The highest correlation is between monitoring and restoration projects ($\rho = 0.72$), which suggests that one of the two criteria could be considered for elimination. However, the authors are reluctant to eliminate either on conceptual grounds. Restoration projects are the central activity of watershed partnerships, and a commitment to monitoring is a necessary condition for ascertaining if a partnership is actually having desired effects on watershed conditions—the ultimate indication of partnership success.

Multi-dimensional scaling (MDS) can reveal patterns among the success criteria that are not apparent in a simple table of bivariate correlations. Given a matrix of correlations (Table 4), which can be interpreted as inverse distances between variables, MDS attempts to map those distances to a coordinate system using fewer dimensions than in the original matrix. For example, precisely mapping the distances between the six evaluation criteria would require six dimensions, but an approximation of those distances using two or three dimensions might be easier to interpret. MDS is often used in lieu of other data reduction techniques such as principal component analysis when (1) high percentages of missing data are likely, (2) the distances between variables are known but the Euclidean coordinates are unknown, (3) representing exact distances is less important than preserving relative positions using a manageable number of dimensions—usually 2 or 3—or (4) when data from a variety of measurement standards (quantitative, semi-quantitative, or qualitative) need to be combined (Legendre and Legendre, 1998). In this case, points (3) and (4) were of most concern.

Figure 2 maps the correlations on three dimensions using a MDS model for ordinal data (a non-metric model). The model produces an adequate approximation of the original matrix, as revealed by the goodness-of-fit statistics (stress < 0.001, 75 percent of variance explained). Each dimension (axis) of the MDS map can be interpreted as an unobserved factor responsible for generating the observed distances.

Focusing on the first two dimensions of the MDS map (Figure 2, top), the evaluation criteria are arranged in three clusters. One cluster includes the two criteria measured with survey data (the two perceived-effects criteria). Another cluster includes restoration projects, monitoring, and agreements—reflecting the fact that agreements are generally a prerequisite for restoration projects, and restoration projects are a prerequisite for monitoring of field compliance and post-project effects. Education projects stand apart.

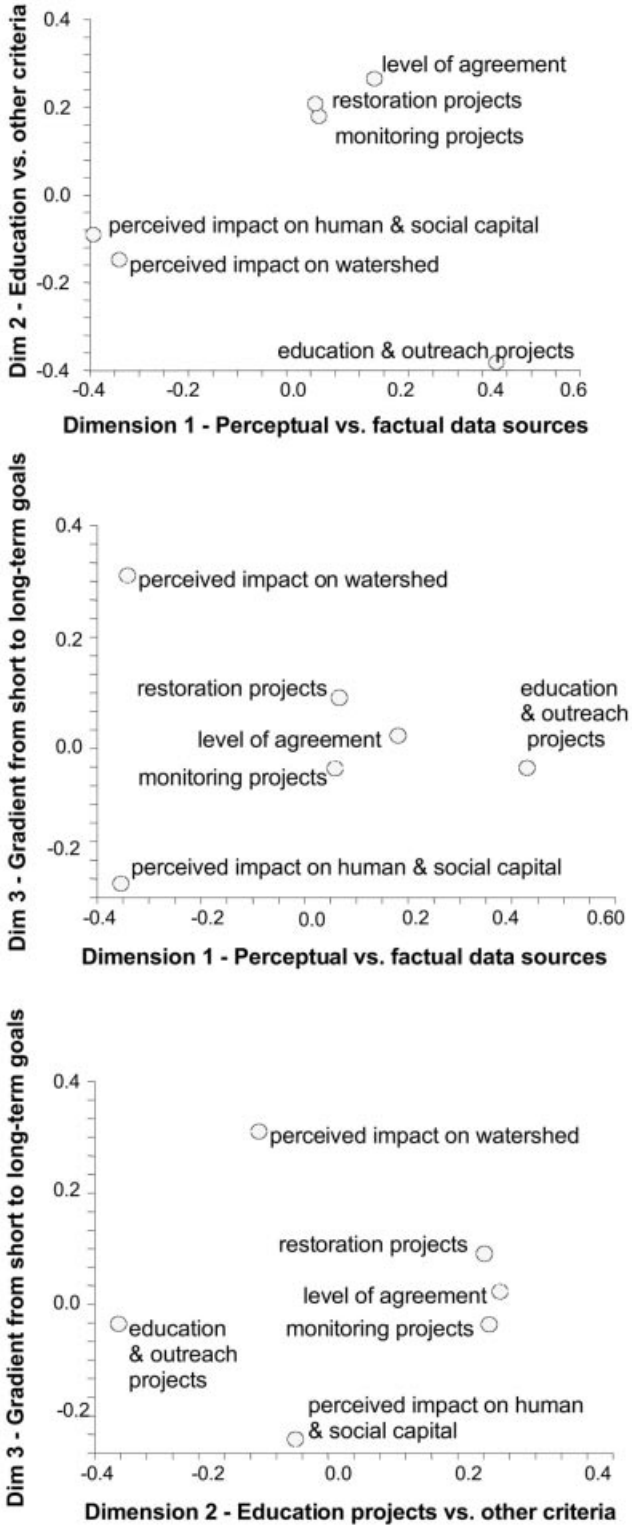

Figure 2. Multidimensional scaling of correlations among evaluation criteria.

Dimension 1 (accounting for 31.0 percent of the variance) appears to be most effective at isolating the two survey-data criteria from the other criteria, which were measured using factual information from interviews and documents. This dimension indicates that the factual and perceptual data paint somewhat different pictures of a partnership's accomplishments. Both are probably necessary for a complete picture.

Dimension 2 accounts for 27.2 percent of the variance, and seems to separate education from the other five success measures. This indicates that education projects can occur independent of other partnership activities, such as restoration or monitoring projects.

Dimension 3 (accounting for 16.8 percent of the variance) creates a gradient from effects on human and social capital, through agreements and projects, and then to perceived effects on watershed conditions. This can be interpreted as a temporal dimension separating short-term, medium-term, and long-term goals. Connell and Kubisch (1998), Innes (1999), and Weiss (1972) have argued that all three temporal goals should be evaluated.

In summary, the bivariate correlations indicate that the six evaluation criteria are disjoint, such that each criterion contributes something unique to the overall portrait of partnership success. The MDS analysis suggests that this lack of redundancy stems in part from the diversity of data collection methods, and from the inclusion of criteria reflecting short-, medium-, and long-term partnership goals.

RESULTS: EVALUATION CRITERIA

Perceived Effects on Watershed Conditions

Figure 3 displays how each partnership scored on the index of perceived effects on 12 watershed problems. Partnership scores were calculated by averaging across all survey respondents for each partnership. All the partnership scores fall within a narrow band between -0.5 and +1.1, on a scale where -3 indicates that "the partnership has made the problems much worse," and +3 indicates "much better." Five of the 44 partnerships received negative scores, suggesting that they had made matters slightly worse overall.

Perceived effects improve with the age of the partnership, on average.[14] Analysis of variance indicates that partnerships over 6 years old have significantly higher perceived effects than partnerships in both the "under-2-years" and "2-to-4-year" age classes (F-ratio = 4.33, p-value < 0.01, Bonferroni multiple comparison test). The magnitude of this increase (about 0.4) is small in terms of the seven-point scale, but quite large in the context of the observed range of -0.5 to +1.1. Specifically, the "effect size" is 1.52, signifying that the mean of the oldest set of partnerships is 1.52 pooled standard deviations higher than the mean of the youngest set. Effect size is an especially useful metric for quantifying mean differences measured on novel scales (Coe, 2000). The 95 percent confidence interval for the effect size is 0.52 to 2.52.

Figure 4 disaggregates the perceived effects and perceived seriousness for 12 watershed problems. Partnerships are most effective at addressing conflict among stakeholders, threats to species and habitat, and impaired water quality. Partnerships score themselves significantly higher for success on these problems in

[14] Age was measured in months from the inception of the partnership to the date of the interviews for extant partnerships, and from inception to disbandment for defunct partnerships.

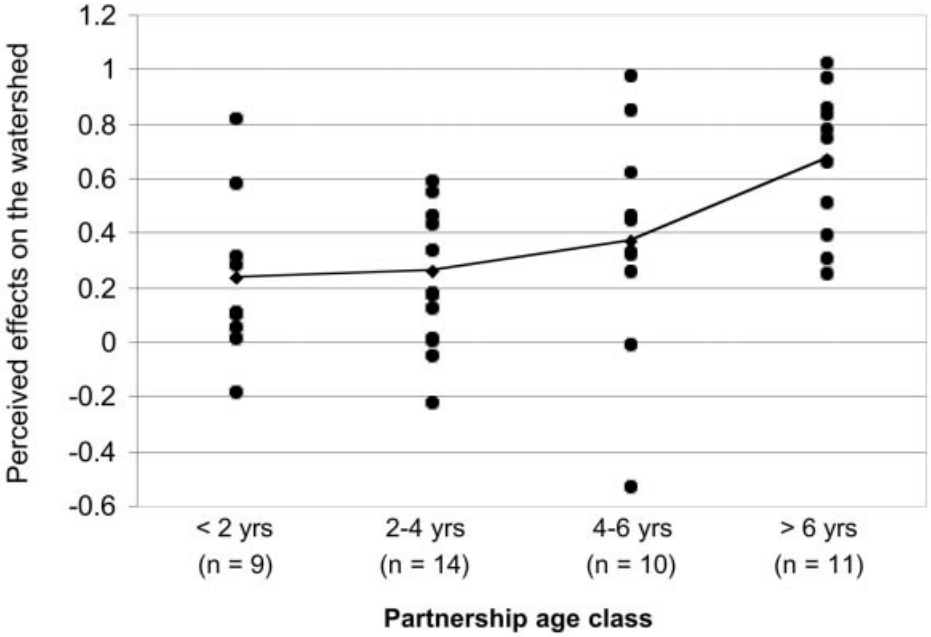

Figure 3. Partnership scores (n = 44) on the index of perceived effects on the watershed. Scale: -3 = very negative effect; +3 = very positive effect. Line connects mean partnership scores across age classes.

nonparametric repeated-measures ANOVA models containing these three variables plus one or more of the remaining nine (Friedman tests, $p < 0.001$). Partnerships also rate these three problems as being the most serious (Friedman tests, $p < 0.05$), which suggests that partnerships probably address these problems most aggressively.

Figure 4 and the ANOVA results suggest that some regional-scale problems may be beyond the control of most watershed-oriented partnerships. Problems such as water supply, population growth, and Native American treaty rights are difficult to control locally, as evidenced by their near-zero medians and narrow ranges. In California and Washington, water supply and treaty decisions are dominated by the courts and by the headquarters offices of state and federal agencies operating out of state and federal capitals—neither of which typically participates in local partnerships. By contrast, responsibility for most of the other 12 problems is frequently delegated to local field offices of state and federal agencies, which typically do participate. Population growth is another exception. Cities and counties can try to manage growth by regulating housing development, but such local efforts are often overwhelmed by statewide or even international trends in interest rates, job growth, and immigration (Sabatier and Pelkey, 1990).

Finally, partnerships entail significant risks. The ranges and center-bars that dip below the horizontal axis in Figure 4 indicate that a sizable minority of partnerships were judged to have aggravated certain problems. Specifically (but not discernible in Figure 4), the average respondent in 29 percent of partnerships claimed that the partnership had harmed the economy. In 32 percent of partnerships, the average respondent claimed that the partnership had eroded private property

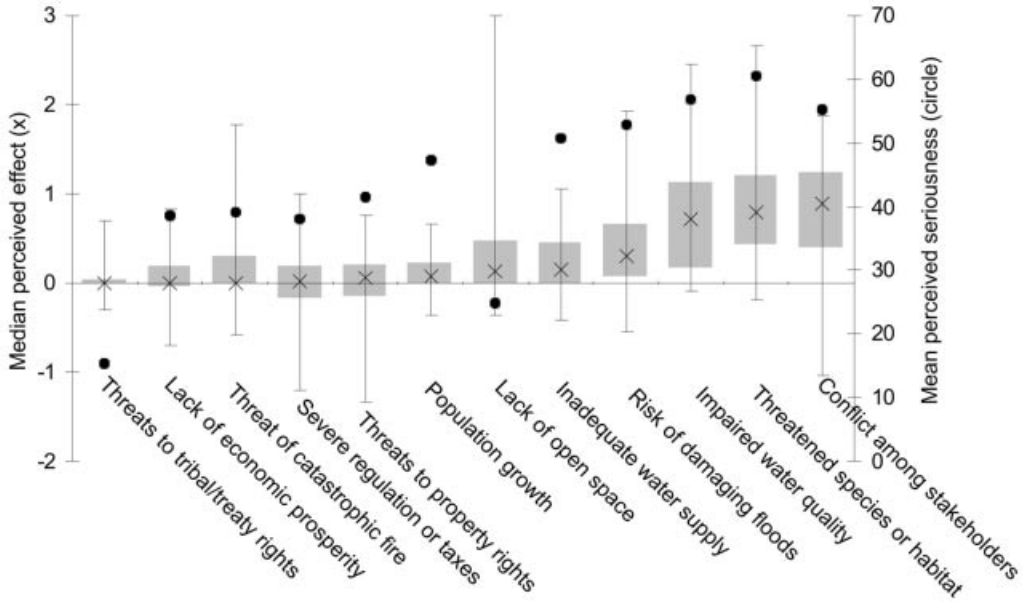

Figure 4. Perceived effects of partnerships (n = 44) on specific watershed problems. Left axis indicates the median (x), range (whisker), and central 50% of observations (shaded). Effect scale: -3 = very negative effect; 0 = no net effect; +3 = very positive effect. On the right axis, circles represent the mean perceived seriousness of each problem, where 0 = not at all a problem, and 100 = extremely serious problem.

rights. In 38 percent of partnerships, the average respondent claimed that the partnership had resulted in more excessive regulation or taxation. In 82 percent of partnerships, the mean evaluation was negative for at least one of the 12 problems.

Perceived Effects on Human and Social Capital

Overall, partnerships appear to be quite good at building human and social capital. On the composite index, 100 percent of partnerships earned scores above the midpoint of 4, on a seven-point scale, where survey respondents can indicate whether they strongly agree or strongly disagree that their partnership has improved their personal stores of human and social capital (Figure 5). The rate of agreement, as measured by the index, rises gradually as partnerships age. Analysis of variance confirms that partnerships older than 6 years have significantly higher perceived effects than partnerships younger than 2 years. (F-ratio = 3.52, p-value < 0.05, Bonferroni multiple comparison test). The effect size is large and statistically significant, with a 95 percent confidence interval of 1.0 to 3.2.

Figure 6 disaggregates the three component questions of the index, and displays the proportion of partnerships that earned mean scores exceeding 5 on the seven-point scale. Of the 44 partnerships, 41 were more effective at improving stakeholders' understanding of each other's perspectives than they were at fostering new long-term friendships or professional relationships (Wilcoxon signed ranks test, p < 0.001). This result is somewhat surprising given the literature's emphasis on networking as a benefit of collaborative planning (Carr, Selin, and Schuett, 1998; Innes, 1999, p. 652).

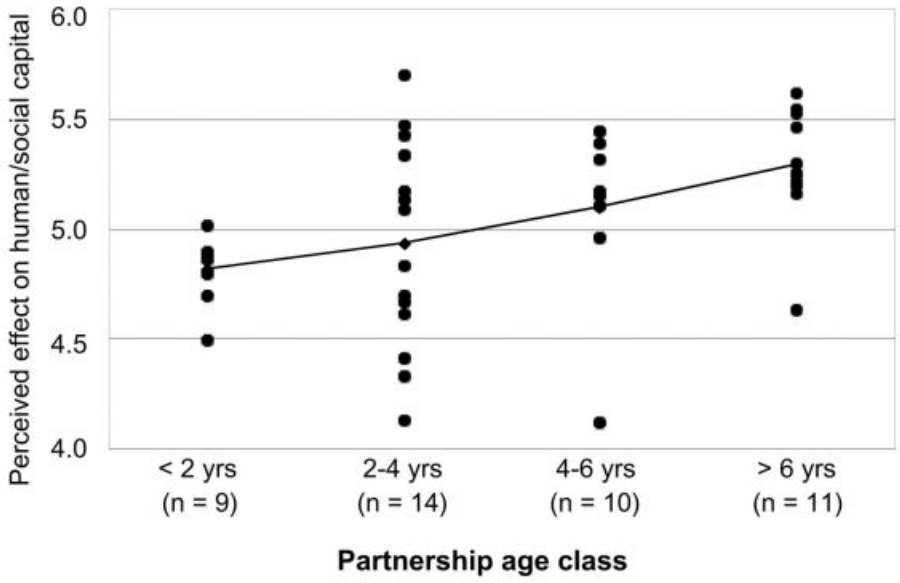

Figure 5. Partnership scores (n = 44) on the index of perceived effects on human and social capital. Scale: 1 = strongly disagree, 7 = strongly agree. Line connects mean partnership scores across age classes.

Agreements, Projects, Monitoring, and Education

More often than not, watershed partnerships that persist beyond their fourth year have achieved several benchmarks of success: agreements on proposed restoration projects, implementation of restoration projects, and monitoring of project effects. Figure 7 demonstrates clearly that older partnerships tend to be more successful than younger ones. Of the nine partnerships in this sample that were under 2 years of age, only three had reached limited agreements, none had agreed to a comprehensive management plan, only one had implemented any restoration projects, and none had monitored effects. Of the 11 partnerships beyond their fifth year of operation, 100 percent had reached agreements, 54 percent had agreed to a comprehensive plan, all but one had implemented at least one restoration project, and 64 percent had done at least some monitoring. Education projects are common even among very young partnerships. For each of the activities in Figure 7, except education, the proportions of partnerships are significantly different for comparisons of any two non-adjacent age classes (Fisher's exact test, $p < 0.05$), but not for adjacent age classes.

The observed increase in success rates over time may be partly due to attrition of failing partnerships. Unfortunately, the authors do not have data on the age at which each partnership achieved each benchmark; data include only the age of each partnership, and its total sum of accomplishments since its inception. Given the age distribution of extant and defunct partnerships, however, one can infer that attrition is only partly responsible for the trend. For attrition alone to account for the increased incidence of management plans among partnerships of the 4- to 6-

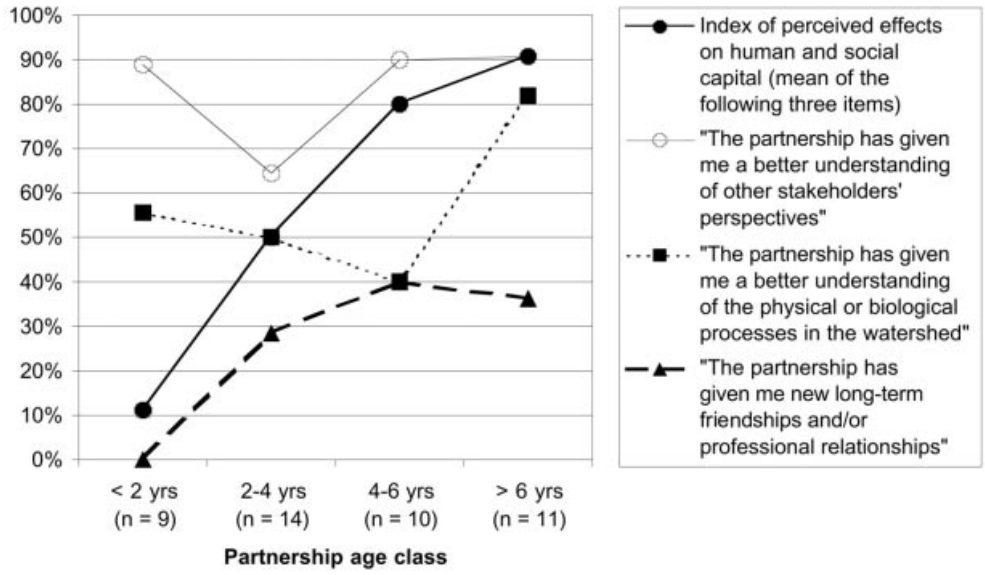

Figure 6. Proportion of partnerships (n = 44) whose stakeholders, on average, agree that their partnership has improved their own human or social capital in each of three ways. (Agreement is defined as a mean stakeholder response of 5 or greater on a scale from 1 = strongly disagree to 7 = strongly agree.)

year range compared to the 2- to 4-year range, for example, there would have to be nine defunct 2- to 4-year-old partnerships for every extant 4- to 6-year-old partnership. The actual ratio is on the order of 1:9 (not 9:1), according to our census of active and defunct partnerships in California.

Of the four types of restoration projects, partnerships are more likely to pursue those that are easier to implement. Stream channel projects (48 percent of partnerships) are relatively uncontroversial, and funding is the primary obstacle. Pollution abatement projects (30 percent) often require funding, and may also require industries or agencies to modify their behavior. Landuse changes (18 percent), such as transferring farms or forests out of production, typically require large sums of money plus willing sellers, and often encounter resistance on ideological grounds. Changes in water allocation (16 percent) involve the same ideological issues, but the state constitutions of California and Washington create obstacles to changes in water rights.

GENERALIZING BEYOND WATERSHEDS AND THE WEST COAST

The results of this study may apply to partnerships that focus on policy issues other than watershed management. However, watershed partnerships are distinctive in several ways, including the diversity of ideologies that participants bring to the

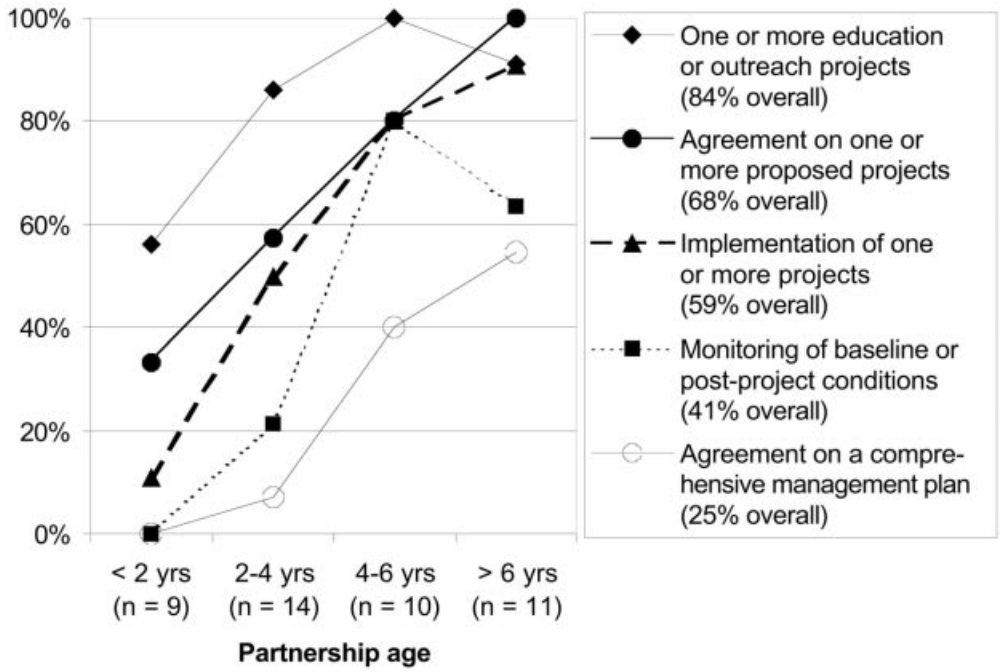

Figure 7. Proportion of partnerships with agreements, restoration projects, monitoring projects, and education projects.

table. Kusel (1996) and McGinnis (1996) have shown that many watershed stakeholders ascribe to a bioregionalist philosophy in which their watershed of residence defines their relationship to nature, and takes on a quasi-religious significance. Other stakeholders view their watershed primarily as a means of livelihood. Consequently, watershed stakeholders frequently disagree on core values, such as the relative importance of environmental quality versus economic freedom. Stakeholders showed little consensus regarding whether, "One person's right to a clean environment is more important than another's right to gainful employment." For the average partnership, 36 percent agreed, 32 percent disagreed, and 32 percent were neutral (median standard deviation = 1.6 on a seven-point scale).

Conflicts on core beliefs are less apparent for other types of stakeholder partnerships. For example, in partnerships that focus on public service provision, the service providers and their clients often agree on basic goals (such as affordable housing) but disagree on strategies or timelines (Kingsley, McNeely, and Gibson, 1997). Value conflicts may make consensus building more difficult in partnerships that tackle environmental issues.

Curiously, the work of watershed partnerships is both emotionally charged, and highly technical, requiring expertise on social, economic, biological, and geomorphological processes. On average, 75 percent of stakeholders agreed or strongly agreed that, "The partnership frequently discusses technical or scientific issues related to managing the watershed." Communication and consensus building can

be especially difficult in a watershed partnership because of the presence of both lay people and technical experts, who often lack a common vocabulary and epistemology. On average, 28 percent of stakeholders surveyed agreed or strongly agreed that, "The scientists and engineers frequently clash with non-technical stakeholders regarding the proper role of science and technology in managing our watershed." If stakeholders are unable to agree on the extent and causes of watershed problems, they are unlikely to agree on proposed remedies. On average, 54 percent of stakeholders agreed that, "The existing body of technical information about our watershed is *in*adequate."

Several studies of watershed partnerships suggest that the phenomenon is similar throughout the country (Born and Genskow, 1999, 2000, 2001; Kenney, 1999; Kenney et al., 2000). However, results from California and Washington might transfer imperfectly to other states. "In watersheds where lower education levels and income make human capital less abundant," Mullen and Allison (1999) observe, "it may be more difficult to engage a diverse group of watershed stakeholders in the kind of public discussions that are needed to build a consensus on watershed management." Mullen and Allison also claim that in most of the rural South, citizens are less likely to involve themselves in environmental issues, and more likely to trust government to handle them. Such a lack of civic engagement could impede partnership success or formation. In turn, success may come slower in regions with fewer partnerships if there are fewer opportunities to learn from neighboring experiences. In regions where the partnership model is especially new and unknown, stakeholders might lack sufficient faith in the process, and might participate too tepidly to be effective.

CONCLUSIONS

The data from California and Washington present a mixed picture of the ability of watershed partnerships to achieve their stated goals and objectives. Most partnerships older than 48 months have reached several milestones including agreements on proposed projects, and implementation of restoration, education, and monitoring projects. Stakeholders perceive that their partnerships have been most effective at addressing problems that can be managed at a local or regional scale. In about one-third of partnerships, the average stakeholder believes that the partnership has aggravated problems related to the economy, property rights, and regulation.

One sanguine finding is that partnerships apparently have the most positive effect on the most serious problems in the watershed, which suggests that partnerships devote more effort to serious problems. This finding contradicts the often-expressed fear, based on theory and anecdotes, that consensus-based processes avoid important issues and result in ineffectual agreements (Born and Genskow, 1999, p. 50; Griffin, 1999; Kenney, 2000). An important caveat is that survey data based on perceived effects may be artificially inflated through cognitive dissonance (Coglianese, 2001; Festinger, 1957). That is, stakeholders may subconsciously overestimate their partnership's effectiveness on serious problems to avoid the emotional discomfort produced by discrepancies between the partnership's priorities and its actual effects.

One of the clearest findings is the positive relationship between each of the evaluation criteria and the age of the partnership. Cognitive dissonance may be partly responsible for this relationship for the perceptual measures (because stakeholders will expect greater results for each month of effort), but dissonance cannot explain the importance of time for the four objective measures: restoration projects, monitoring, education, and agreements. Undoubtedly, multitudes of variables

influence success, and only a multivariate analysis could reveal the importance of age relative to such factors as funding, leadership, geography, and problem severity. Such an analysis is beyond the scope of this paper on evaluation criteria, but is the logical next step.

Given the importance of partnership age, public officials and funding agencies should be careful not to prematurely judge early-stage partnerships as failures. It takes time (typically 4 to 6 years) to educate participants, overcome distrust, reach agreements, secure funding, and begin implementation.

Because partnerships pursue multiple goals simultaneously, multiple measures of success are essential. The bivariate correlations between evaluation criteria, and the multidimensional scaling model, suggest that the six evaluation criteria are disjoint (not redundant), and that they reflect a range of short-term, medium-term, and long-term partnership goals. The criteria also represent a mixture of policy substance (agreements and restoration projects) and civic capacity-building (social capital and education).

Individual partnerships that wish to periodically self-assess their progress should take care to avoid the shortcomings of the "perceived effects" measures presented above, which the authors designed to cope with the current lack of existing monitoring data. Measuring perceived effects is a second-best approach because it obviously excludes the perceptions of non-respondents, and because satisfaction is subjective, and because all survey research is vulnerable to certain types of measurement error (Coglianese, 2001). Objective measures of ecological and socioeconomic conditions are preferable when feasible, and when observed trends can be objectively attributed to partnership activities.

Techniques are available for directly measuring the watershed conditions identified in Figure 4 (including water quality and habitat quality), and the ability of partnerships to collect ecological data (and their awareness of the importance of doing so) has improved markedly over the last decade with the adoption of uniform sampling protocols, new indicators of ecological health, increasing availability of remote sensing data and GIS technology, and the popularity of volunteer monitoring (Harrington and Born, 2000; Karr and Chu, 1999; National Research Council, 1999). If partnerships apply these techniques more frequently, while designing their projects with careful attention to basic principles of research design (Kondolf, 1995), they should be able to objectively evaluate whether their actions are responsible for changes in watershed conditions. One way to promote more monitoring is to incorporate evaluation into the planning process itself. In the "theory of change" approach proposed by Weiss (1995), for example, the stakeholders seek consensus on explicit assumptions about causes and effects, and then tailor their evaluation criteria to monitor each step in the casual chain from problem states to solutions.

Once self-assessment studies become more common, a true meta-analysis of research on stakeholder partnerships could shed further light on the effectiveness of this emergent form of collaborative policymaking. Until then, researchers interested in comparing success across partnerships will need to rely upon both objective measures of activities and perceptual measures of effects.

Future research should investigate whether the nature of success is similar among watershed partnerships operating outside California and Washington, and among stakeholder partnerships addressing non-watershed issues within the two states. Subsequent papers based on our current study will identify the structural, procedural, and contextual factors that allow some partnerships to achieve greater success than others.

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