

ENVIRONMENTAL ASSESSMENT

Watershed Management and Organizational Dynamics: Nationwide Findings and Regional Variation

BRAD T. CLARK

Department of Political Science
Colorado State University
Fort Collins, Colorado 80523-1782, USA

NINA BURKARDT*

U.S. Geological Survey
Fort Collins Science Center
2150 Centre Avenue
Fort Collins, Colorado 80526-8118, USA

M. DAWN KING

Department of Political Science
Colorado State University
Fort Collins, Colorado 80523-1782, USA

ABSTRACT / Recent attention has focused on resource management initiatives at the watershed scale with emphasis on collaborative, locally driven, and decentralized institutional arrangements. Existing literature on limited selections of well-established watershed-based organizations has pro-

vided valuable insights. The current research extends this focus by including a broad survey of watershed organizations from across the United States as a means to estimate a national portrait. Organizational characteristics include year of formation, membership size and composition, budget, guiding principles, and mechanisms of decision-making. These characteristics and the issue concerns of organizations are expected to vary with respect to location. Because this research focuses on organizations that are place based and stakeholder driven, the forces driving them are expected to differ across regions of the country. On this basis of location, we suggest basic elements for a regional assessment of watershed organizations to channel future research and to better approximate the organizational dynamics, issue concerns, and information needs unique to organizations across the country. At the broadest level, the identification of regional patterns or organizational similarities may facilitate the linkage among organizations to coordinate their actions at the much broader river basin or ecosystem scale.

Watershed Organizations and Regional Dynamics

A watershed represents a topographically defined area that is drained by a stream system—representing a smaller upstream catchment—that is a constituent of a larger river basin. This landscape encompasses *both* surface and groundwater supplies, in addition to related terrestrial and community resources. Increasingly, the watershed has come to be viewed as a place based and ecological entity, as well as a socioeconomic and political unit to be utilized for management planning, conservation strategies, and implementation purposes.

KEY WORDS: Watershed management; Organizational characteristics; Regional variation; Collaborative decision-making; Place-based conservation

Published online June 28, 2005.

*Author to whom correspondence should be addressed; *email:* Nina_Burkardt@usgs.gov

By extension, a watershed management initiative represents a collective effort to organize on behalf of interested stakeholders, concerned area citizens, and relevant public agencies. The intent of such a local enterprise is to improve the condition and related management regime of the water and natural resources within a watershed. Similarly, watershed management practices include an array of structural and nonstructural actions ranging from changes in land-use regimes, statutorily sanctioned commercial and recreational activities, alteration of vegetative covers, changes in “preferred” multiple uses, water quality monitoring, development and application of flow models and regimes, education, community outreach, integrated thinking, and promotion of holistic land and water stewardship (Rieke and Kenney 1997).

The intent of this research is to obtain a nationwide sampling of watershed management organizations (WMOs) from across the United States and assess whether the organizational characteristics and issue concerns of this broad sample exhibit variations. Findings are then assessed in relation to those presented by existing literature, which are generally ob-

tained from a few, specific watershed organizations and/or those from isolated geographic areas. Ultimately, the nationwide findings are divided on the basis of location (western United States and eastern United States) as a means to capture and assess the variation expected to emerge between regions of the country.

In the first part, we present the general findings from the nationwide survey. These include basic organizational characteristics related to the areas of year of formation, membership size and composition, budget, guiding principles, and mechanisms of decision-making. In the second part, we apply closer attention to these areas and findings, which are discussed on the basis of the region. Basic elements are suggested to inform a regional assessment of watershed organizations and promote development of a classification system, which may channel future research to better approximate the organizational dynamics, issue concerns, and information needs unique to organizations across the country. This research can also inform current and prospective watershed initiatives, as more collaborative organizations emerge across the array of geographic locations and organizational circumstances in the United States. At the broadest level, the identification of regional patterns or organizational similarities may facilitate the linkage among organizations to coordinate their actions at the much broader river basin or ecosystem scale.

Background

In recent decades, the organization of natural resource management at the watershed scale has become a viable means to augment traditional methods, which tended to discount hydrological boundaries and ecological interconnectedness (Leach and Pelkey 2001). Instead of focusing attention and resources on an isolated water resource problem, a much broader perspective is taken. This involves an inherent recognition of ecological interconnectedness, holistic management strategies, promotion of sustainable development, participatory and inclusive decision-making structures, legitimate stakeholder involvement, and the promotion of both the adaptive capacities of organizations and the forging of public-private partnerships on a distinctively local basis.

Indeed, this watershed-based approach to resource management and the related emphasis on decentralized institutional arrangements represents a departure from the traditional command-and-control approach to environmental management (Weber 2000, Born and Genskow 2000). The traditional approach, although

successful in establishing minimum national standards and enforcement mechanisms, has been widely criticized for its regulatory inflexibility, one-size-fits-all policy prescriptions, and excessive transaction costs (Rieke and Kenney 1997, Weber 1998). Additionally, in response to these high costs and the command-and-control approach behind the 1972 Clean Water Act, questions have arisen regarding its efficiency and effectiveness (Mazmanian and Kraft 1999). Calls have been made for the use of new approaches to decrease costs, promote increased efficiency and flexibility in implementation, and emphasize pollution prevention and ecosystem management, especially within river basins. A key component among these emergent approaches, which is often portrayed as critical to long-term success, is increased focus on cooperation and collaboration (Leach and Pelkey 2001).

Momentum in this direction is manifest via the recent development of numerous WMOs across the nation. Although an exact count is not available, the institutional landscape has witnessed unprecedented growth. For example, as of April 2002, a database operated by the U.S. Environmental Protection Agency (EPA) contained voluntary listings for over 3500 organizations from across the United States involved in protecting local watersheds (www.epa.gov/adopt/network.html). In addition, many state governments and scores of nonprofit organizations maintain electronic listings with contacts and other information pertaining to WMOs. Many state legislatures have also passed legislation to authorize or facilitate watershed efforts (Kenney and others 2000). Also, although particular collaboration-based resource management organizations have existed for decades, we speculate that the vast majority of these innovative institutional arrangements have emerged during the previous decade-long period (1990–2000). As a result, comprehensive research on WMOs remains in a relatively early stage.

In addition, although existing literature has investigated a selection of well-established WMOs and other collaborative decision-making forums, there exist thousands of such groups from across the nation that have received little attention. In fact, a review of recent studies suggests that research has focused on organizations located in particular regions. For example, organizations located in the Pacific Northwest (mainly in coastal watersheds) and California appear to have received the greatest attention (e.g., Rieke and Kenney 1997, Born and Genskow 1999, Johnson and Campbell 1999, Thomas 1999, Cobourn 1999, Duram and Brown 1999, Kenney and others 2000, Born and Genskow 2000, Singleton 2000, Habron 2003). The intermoun-

tain West has drawn a lesser degree of attention (e.g., Rieke and Kenney 1997, Kenney and others 2000, Bentrup 2001). Moving across the country, particular watersheds in the upper-Midwest, chiefly Ohio and Wisconsin (e.g., Landre and Knuth 1993, Born and Genskow 2000, Korfmacher 1999, Moore and Koontz 2003) and the Atlantic coast, particularly North Carolina (e.g., Korfmacher 1999, Born and Genskow 2000) have received recent scholarly attention. Likewise, particular watersheds located in states of the Northeast United States have been the focus of recent scholarship (e.g., Holland 1996, Korfmacher 1999, Michels 1999, Born and Genskow 1999, Chess and Gibson 2001). This research seeks to extend this focus by including a broad survey of WMOs from across the entire United States.

Indeed, existing research has yielded valuable insights into selections of WMOs and their distinctive features, yet there remains a relative paucity of research directed towards a national portrait and search for regional patterns. This lack of research is understandable, given the recent emergence of the phenomenon, yet the need remains to generalize from particular WMOs in order to form categories of, and ultimately theories about how these emergent organizations function and their potential viability as alternative forms of natural resource management. Hence, this research has an exploratory dimension, in presenting initial elements for the establishment of a classification scheme based on organizational location. See Moore and Koontz (2003) for a similar proposal for a classification scheme based on organizational composition.

The broad expectation driving the current research is that a great many WMOs may not fit into the "ideal type" of organization laid out by many scholars. Specifically, the hypothesis is that organizational characteristics and issue concerns of these groups will vary with respect to their regional distribution. In turn, such regional variations will, in large part, determine organizations' successes and affect their relative visibility and prominence on the national political landscape. Because the focus is on organizations that are place based and stakeholder driven, the forces driving them should not be consistent across regions. For example, because state law generally determines water allocation mechanisms and priorities, WMOs from western states will naturally face different legal contexts—and ecological conditions—when compared to those from states located East of the 100th meridian (i.e., prior appropriation and pressing concerns over water *quantity* versus the riparian doctrine and concomitant water *quality* concerns). In addition, organizations may be

more likely to form around coastal watersheds due to concerns for endangered species, particularly anadromous fish, or around highly urbanized watersheds out of concerns for pollution and human health. Clearly, such dynamics will prompt the initiation of WMOs and dictate their operation in a variety of ways. By including a diverse sampling of both large, well-established and small-scale watershed initiatives and their nascent organizations, some of which are often engaged in low-level environmental activities (e.g., public outreach and education), the current research proposes a more comprehensive understanding of these contemporary organizations and speculates on both the evolution of watershed management initiatives and the maturation of the entire place and-collaboration-based movement.

Methods

A broad list of organizations was compiled by referencing several sources. An important methodological concern was to establish an operational definition for a WMO, out of necessity to apply certain criteria to determine which initiatives qualified for inclusion. A recent literature review indicates that WMOs involve long-term endeavors whereby diverse groups of stakeholders assemble to resolve conflict and manage watershed resources through the development of strategies and/or implementation of policies (Leach and Pelkey 2001). This working definition is enhanced in two ways by including specific aspects offered by Kenney and others (2000). First, WMOs are largely self-directed and place-based collections of public and private stakeholders who operate by and large outside of traditional government processes or decision-making forums. Second, WMOs typically employ collaborative mechanisms of group interaction and communication, characterized by open debate, inclusive and consensus-based decision-making, flexibility, adaptability, and voluntary action. In developing our sample, we came across a small number of groups that were deemed unsatisfactory for inclusion, either because they were formally under direction from a single environmental organization (e.g., Trout Unlimited), or because they represented short-term initiatives as characterized by the definition offered by Leach and Pelkey (2001).

The EPA maintains an online listing of WMOs involved in protecting local water resources (www.epa.gov/adopt/network.html). This served as a primary source of information. As a supplement, extensive Internet searches yielded many electronic databases maintained by various environmental

organizations, WMOs themselves, state bureaucracies, and universities. Principal among these were American Rivers (2002), The River Network (2002), and Information Center for the Environment (2002).

A list of nearly 600 WMOs was compiled. The number of surveys sent to each of the 50 states varied due to inconsistent availability of contact information. States in which there existed numerous WMOs—which had taken some initiative for listing in one or more electronic databases—were sent proportionally more surveys compared to states with either fewer WMOs and/or few listed electronically. Thus, it is possible our national results are affected by the availability of data. Although we acknowledge that this sample does not represent a wholly complete census, the list does represent organizations from a wide geographic scope, with multiple listings from each of the 50 American states.

Dillman's (2000) protocol for survey construction and distribution was followed. An electronic postcard was first sent to each contact in November 2002, stating that a survey would be sent asking for information about their WMO. This also served as an address check so that contact information could be corrected or eliminated for WMOs that were unreachable. Approximately 10 days after initial contact, a cover letter and survey were e-mailed to 574 contacts that were asked to complete the questionnaire and to return it either electronically or by the U.S. Postal Service. Two weeks after the first distribution, an electronic postcard was sent to WMOs on the initial distribution list, thanking those who had responded and requesting non-respondents to complete the questionnaire. Two weeks later, a second copy was sent to nonrespondents, followed by a third request 2 weeks later. Data collection ended in March 2003. Overall response rate was 37%. Clearly, such a figure is to be considered somewhat low, yet in the context of e-mail surveys, this response rate is consistent with findings from a recent review of response rates to e-mail surveys conducted between 1986 and 2000 (Sheehan 2001).

Findings: A Nationwide Portrait of WMOs in the United States

State Representation

A primary concern was to receive a sufficient number of survey responses from all 50 states, in order to approximate a representative sample of organizations. Despite repeated attempts, survey responses were not received from contacts in three states (Mississippi, South Dakota, and Wyoming). Nonetheless, efforts

were taken to ensure that a minimum of five contacts was obtained for and surveys sent to each of the 50 states. Table 1 indicates the number of responses from each state.

Beyond seeking to obtain a nationwide sample of respondents, this research sought to enhance understanding of the general organizational characteristics of WMOs. To explore this issue, respondents were asked to answer queries pertaining to the basics of their organization in terms of when and for what reasons they formed, group size, budgetary status, membership dynamics, and to provide method(s) used for decision-making. At the aggregate level, the findings from this research provide insight into a general portrait of WMOs from across the United States.

Year of Formation

Regarding the point in time during which WMOs began to appear in the political landscape and become active in management debates and natural resource policymaking, the findings evidenced through this research are consistent with the expectations. Of the organizations surveyed, the mean year of formation was 1991 (mean statistic = 1990.79; minimum = 1904; maximum = 2002; standard deviation = 13.06). Therefore, it appears that during the early years of the 1990s, the tendency to both conceive of and develop strategies around "the watershed"—or more broadly, the river basin, had become fairly well developed. Such a finding is consistent with existing literature on WMOs (e.g., Wooley and McGinnis 1999, Leach and Pelkey 2001). This holistic and ecology-driven way of viewing water resources and their immediate landscapes had become manifest in line with the emergent paradigm of ecosystem management during the early 1990s. Perhaps the contemporary and ongoing influx of ecosystem management language into the policy statements of federal and state natural resource agencies prompted a refocusing of attention on watershed management as a practical surrogate unit of ecosystem management; or more practically, widespread recognition that the politics of conflict that have defined natural resource policy-making over the past 30 years may have prompted the increased emphasis on collaboration that is fundamental to the watershed approach (Moore and Koontz 2003).

Motivating Factors

In a related context, respondents were queried about the primary motivating factor(s) behind their group's formation. The focus is on exploring the reason(s) and related issue concerns that prompted

Table 1. Total responses by state

State	Response	State	Response
Alabama	4	Montana	4
Alaska	4	Nebraska	1
Arizona	2	Nevada	2
Arkansas	2	New Hampshire	4
California	16	New Jersey	2
Colorado	5	New York	4
Connecticut	5	New Mexico	3
Delaware	3	North Carolina	10
Florida	4	North Dakota	2
Georgia	2	Ohio	4
Hawaii	1	Oklahoma	1
Idaho	5	Oregon	21
Illinois	6	Pennsylvania	12
Indiana	4	Rhode Island	1
Iowa	3	South Carolina	3
Kansas	2	South Dakota	0
Kentucky	3	Tennessee	7
Louisiana	1	Texas	3
Maine	5	Utah	1
Maryland	2	Vermont	4
Massachusetts	3	Virginia	5
Michigan	8	Washington	7
Minnesota	7	West Virginia	3
Mississippi	0	Wisconsin	9
Missouri	1	Wyoming	0
		N=	211

groups to organize in the first place. Perhaps motivated by reactive concerns to declining conditions within their watershed, approximately half of the survey respondents (49.5%) listed the primary factor that had inspired group formation as a "response to existing natural resource or ecological damage within the watershed." Alternately, and suggesting a proactive demeanor, 17.5% of survey respondents stated that it was the "anticipation of future ecological damage within the watershed" that had primarily motivated group formation (N = 210). The remaining 33% chose both as the primary factor for group formation.

Membership Size

Regardless of whether one is considering the internal dynamics of a given political party, interest group, or other type of issue-oriented organization, a common theme and focus of inquiry centers around the attraction and maintenance of members, as well as the organization's operating budget. To explore this area, respondents were questioned about the size of their organization's membership, membership requirements, annual operating budget, and whether their organization had paid staff positions and utilized the services of paid consultants.

For overall size, respondents were asked to choose from among five categories to describe the range of members in their organization. Table 2 displays the results.

Budgets

To explore the range of annual operating budgets for WMOs, respondents were asked to choose from among five categories. The majority of organizations (63.3%) fell into budgetary categories at the two extreme points in the range (low versus high), with the overall plurality of organizations (36.7%) indicating rather substantial annual operating budgets. Table 2 displays the results.

Leach and Pelkey (2001) found that funding was the most frequently identified key to success listed by WMOs. Regarding funding sources, research suggests that despite limited nongovernmental funding—including corporate and foundation support and volunteer contributions—funding from federal, state, and local sources is essential for the successful operation of WMOs (Rieke and Kenney 1997, Born and Genskow 2000).

To further explore this area, respondents were queried over the stability of their organization's funding. Roughly 34% felt that their current funding was stable (N = 205). For the remaining organizations, 30% indicated that their funding levels were decreasing, whereas 36% actually perceived an increase from previous levels.

A related issue is whether WMOs dedicate portions of their annual operating budgets in order to pay individuals—from either inside the membership and/or from outside markets—to facilitate the functioning of the organization. Of those surveyed, 68.7% (N = 210) indicated that their organizations had paid staff members. Therefore, there exist a great many WMOs that do not rely entirely on the volunteer activities of their members. Further research may suggest a relationship between the apparent necessity of paid staffers and the complex technical and legal environments in which many WMOs find themselves operating. Furthermore, 73% (N = 208) of those surveyed indicated that their organizations utilized the services of paid consultants, including those offered by legal, engineering, and/or biological or environmental specialists. Again, this reliance upon the services of specialists from a variety of fields may be a simple reality for WMOs in order to remain active, informed, and viable players in the contemporary realm of natural resource management and policy-making. In fact, numerous WMOs examined in current research have confirmed the importance for groups to procure technical expertise and information, as well as an out-

Table 2. Membership sizes and budgets

Range of membership	Percent	Range of annual budgets	Percent
1–5 members	3.4	0–\$9,999	26.6
6–25 members	29.4	\$10,000–\$19,999	7.2
26–75 members	23.7	\$20,000–\$49,999	16.4
76–150 members	12.3	\$50,000–\$99,999	13.0
151 members or greater	28.4	\$100,000–or greater	36.7
	*N= 210		*N= 205

side facilitator to conduct their meetings, in order to enhance organizational operations and success (Rieke and Kenney 1997, Kenney and others 2000, Born and Genskow 2000, Leach and Pelkey 2001).

In addition, respondents were asked whether their organization had formal membership requirements (such as annual dues, residency requirements, or service obligations). Roughly 55% of respondents indicated the lack of any such requirements for membership, whereas 45% affirmed the presence of formal requirements in their organization. Beyond formal membership requirements, a clear majority of the organizations surveyed (97%) indicated that their meetings are open to members of the general public (N = 209). Such a means of fostering inclusive memberships and encouraging diverse participation in a flexible and informal structure has been linked to success among WMOs (Leach and Pelkey 2001).

Public–Private Relationships

A fundamental aspect of WMOs is the presence of public–private relationships, because memberships frequently comprise individuals from the general public and/or private sector of the economy, and individuals affiliated with government agencies (i.e., state departments of environmental quality, water quality, natural resources, and/or federal agencies such as the Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, National Resource Conservation Service, and/or EPA). Perhaps more significantly, WMOs must operate in a maze of bureaucratic and intergovernmental institutions in pursuit of their objectives, with the fulfillment thereof fundamentally relying upon cooperation and collaborative decision-making among often-disparate sets of private and public actors. In this context, respondents were asked two questions, one to determine whether personnel from state agencies were represented in the organization's membership, and one asking about the presence of personnel from federal agencies. Existing literature has highlighted the importance of active involvement and technical support by staff from state

or federal agencies in fostering success on behalf of WMOs (Rieke and Kenney 1997, Born and Genskow 2000, Leach and Pelkey 2001).

For the presence of state agency personnel, 68% of the WMOs answered affirmatively, whereas 31% indicated the absence of such personnel (N = 207). Regarding personnel from federal agencies in their membership, 53% of the organizations affirmed such a presence (N = 204). According to Rieke and Kenney (1997), among the most supportive federal agency has been the National Resource Conservation Service (NRCS), which establishes conservation districts that often serve as a framework or "seed" from which watershed initiatives originate and are sustained. In addition, the EPA has been shown to be a significant promoter of watershed initiatives, via the provision of a variety of resources as well as the agency's constant pursuit for language in proposed reauthorizations of the Clean Water Act that would outline watershed management as the dominant organizing principle (Rieke and Kenney 1997).

Conversely, there exist a host of complex intergovernmental and bureaucratic factors that may impede or frustrate the development and implementation of watershed policy (Rieke and Kenney 1997, Selin and others 1997, Wooley and McGinnis 1999, Randolph and Bauer 1999). Perhaps active involvement in WMOs by government agencies represents both part of the solution and the problem for organizational success. Steelman and Carmin (2002) suggest that different types of organizational memberships (i.e., "community oriented" versus "government oriented") are more appropriate for different contexts. In this sense, the relative complexity and scope of the watershed and related management issues around which an organization has formed may impact not only membership composition, but also the success of a given WMO.

Because WMOs are inherently locally oriented and stakeholder-driven, the relative lack of a federal presence evidenced by this research in many of the organizations' memberships may stem from apprehensions associated with federal (i.e., bureaucratic) involvement. For example, an organization from the Pacific

Northwest attached the following comment to their survey response.

"WMOs are generally perceived as 'local' organizations... when we do go outside for technical assistance, we need to be very careful to have ownership of any process that may involve the use of outside technical support. [This] may be a little paranoid, but if we ever give the perception to our local constituency that we are directed by state/federal agencies, we will lose the support of our constituents."

Additionally, and perhaps based on a different apprehension for inclusion of government agencies in a WMO membership, an individual from the Northeast commented:

"We work with both state and [federal] government agencies but they are not members of our group. Because our group is an activist, environmental group dealing with social justice and public policy issues, as well as mine drainage remediation and watershed health, I believe many of them do not feel free to belong as a member."

Moore and Koontz (2003) suggest that the relative presence of agency personnel in an organization's membership will affect both the means chosen to accomplish goals and the subsequent impacts these may have on policy. Specifically, WMOs that are "citizen-based" are posited as more likely to employ traditional, confrontational means such as lobbying to overtly influence policy, whereas organizations with "agency-based" or "mixed" memberships are said to more often rely upon less direct and visible means such as providing technical advice to decision-makers in order to prompt changes in their decision-making. As such, the actions of WMOs comprising exclusively private stakeholders may be more visible and their tactics often adversarial, whereas organizations with strong agency presence in their memberships may act more subtly, perhaps exerting more lasting influence on policy. For more on how the interaction of private and public actors within a watershed organization may impact policy, see Korfmacher (1999).

Regarding the tone of working relationships, almost 93% of WMOs surveyed portrayed their working relationships with state agencies as positive, generally supportive, and fairly productive. Slightly more than 3% of the organizations described the relationships as "neutral," whereas 4% indicated that working relationships with state agencies were negative and rarely productive (N = 154). For federal agencies, 89% of WMOs depicted working relationships as positive, generally supportive, and fairly productive. The remaining organizations (6.7%) described the relationships as "neutral," and 4.3% indicated that the working rela-

tionships with federal agencies were negative and rarely productive (N = 119). It is interesting to note that 27% of WMOs chose not to respond to the question on working relationships with state agencies and 44% offered no response regarding their relationships with federal agencies. This may reflect some hesitation on behalf of the organizations to speculate on the nature of their relationships with government agencies, especially when asked by researchers from a federal agency. Also, although the issue of working relationships between government agencies and private organizations or individuals represents a subfield of environmental politics and policy in its own right (e.g., see John 1993, Clarke and McCool 1996, Scheberle 1997, Thomas 1999), the current research sought to capture a broad measure of this dynamic concept. A comment submitted by a respondent from the intermountain West alludes to the intricacies involved in public-private relationships.

"Regarding [your] questions about the helpfulness and productivity of working with state and federal agency personnel, there are such vast differences...these are almost completely dependent on the personalities of the individuals that it is difficult to rank this...yet helpfulness seems to improve as you reach higher levels within an agency. When thinking of EPA, several of their staff are very supportive on the phone, but it's difficult to actually get them to attend a substantive meeting away from their office. On the other hand, the higher in the 'food chain' you go, the more helpful individuals within EPA are to local watershed groups. This seems to be true for state agency personnel as well...it might be because they are more aware of the potential for bad publicity for their agency if they are perceived by grassroots groups as putting up roadblocks to citizen participation in local resource decisions."

Organizational Principles and Decision-Making Mechanisms

Embodying an alternative approach to resource management, contemporary WMOs signify the evolution from the traditional vertical orientation towards an increasingly horizontally linked, decentralized, and participatory mode of decision-making. This bottom-up organizational design is driven largely by citizen concerns about local or regional problems and broad participation among stakeholders who are likely to be affected by the outcomes of water management decisions. As such, there is strong emphasis on grassroots participation and democratic processes, including collaboration decentralization, inclusion, consensus-based decision-making, and perhaps most notable, partici-

Table 3. Primary decision-making mechanism

Mechanism	Percent
Single vote by one designated member	1.5
Voting among board of directors only	52.5
Simple majority (51% minimum approval of all members)	17.5
Super majority vote (80% minimum approval of all members)	9.0
Total consensus or unanimity among all members	19.5

*N = 200

patory government (Rieke and Kenney 1997). The literature also emphasizes the building and maintenance of interpersonal trust among members of WMOs as critical for success (Rieke and Kenney 1997, Kenney and others 2000, Leach and Pelkey 2001).

To determine whether such foundational principles of the watershed approach are indeed prominent in contemporary organizations, respondents were asked about the extent to which their organizations were based on the principles of collaboration, stakeholder participation, and inclusiveness. The clear majority (73.3%) confirmed that these principles were fundamental to their organization and its decision-making structure (N = 210). Of the remaining respondents, 22.4% indicated that their organization is "somewhat" based on these principles and that although they may exist in theory, they only emerge sometimes in actual decision-making. The remaining 4.3% of WMOs indicated that such principles are not reflected to any significant degree.

Regarding the actual procedures or mechanisms for decision-making, Griffin (1999) suggests that widespread support indicates public support and thus, consensus-based decision-making is desirable, because it requires near universal agreement. However, it is often unclear exactly how many people need to agree or disagree before consensus can be said to have been reached, and therefore, decision-making by voting may be desirable because it records the exact number of people in favor and opposed to a particular issue. Moreover, although theoretically desirable, consensus decisionmaking may cause dissenters to appear illegitimate, divert attention from the most important and contentious issues, or lead to protracted stalemate and organizational paralysis (Rieke and Kenney 1997, Leach and Pelkey 2001). Yet despite these potential problems stemming from reliance on collaborative and/or consensus decision-making among disparate sets of actors, such principles remain fundamental to the watershed approach.

To explore this area and gain insight into the actual decision-making processes employed by contemporary WMOs, respondents were asked to name the primary

mechanism through which important decisions are made. Interestingly, a majority of organizations (52.5%) indicated that the primary decision-making mechanism relied little—if any—on either consensus or participation from the entire membership. Such a finding runs counter to the ideal type WMO or more broadly, the contemporary model of collaborative natural resource management (e.g., Selin and Chavez 1995, Rieke and Kenney 1997, Griffin 1999, Bentrup 2000). Results are displayed in Table 3.

As a final organizational characteristic, the issue of internal efficacy on behalf of WMOs was explored. How effective and useful do these contemporary organizations think they are? Do they view their organizations as important and influential players in the maze of bureaucratic, legal, and/or technical institutions, which typifies natural resource management in the United States? To explore this issue of group efficacy, respondents were asked a simple—yet rather telling—question: "Which category describes your organization's level of influence in decision-making that directly affects the watershed?"

Despite their recent arrival on the institutional landscape, the clear majority of WMOs across the United States appears optimistic and perceives their influence as rather high, because 82.6% indicated either moderate or high levels of influence in decisionmaking, whereas 14.4% indicated a low level, and 2.9% characterized their level of influence as "very little to none" (N = 208). Moore and Koontz (2003) looked specifically at the accomplishments listed by WMOs and found that the most common involved the creation of a watershed management plan, organizational development and stability, increased public awareness of organizational concerns, and lobbying for and creating policy changes. Our survey question was intended to capture this last category, whereby WMOs report direct influence in decision-making as their most important accomplishment. The literature suggests that WMOs with strong representation of personnel from government agencies in their memberships are more likely to report such accomplishments and thus, their impact on existing policies

may be more substantial and long-lived, albeit less visible (Moore and Koontz 2003).

Organizational Dynamics and Regional Variation

Although the previous section of this paper presented a number of general characteristics of WMOs from across the United States, the next task is to organize these data categorically. Regional location was chosen, because it represents a useful and relevant means of separating the many organizations in the sample into two distinct classes—those located in the western United States versus those in the eastern states. Furthermore, although the 100th meridian would serve as an ideal point of division—this was recognized by John Wesley Powell in his 1879 report for the USGS as the natural demarcation line between the humid east and the arid west—it cuts across a number of states and was therefore not chosen for methodological concerns. However, the method of dividing states into “east” and “west” used in this research closely approximates the hydrological division made by the 100th meridian. From the U.S.–Canada border in the North, this line of demarcation runs south through the Dakotas, Nebraska, Kansas, Oklahoma, and Texas until it reaches the border with Mexico. In the current research, these states through which the 100th meridian runs are categorized with those states in the western United States. Beyond climatic factors, this decision was made for methodological reasons and is largely justified because the Doctrine of Prior Appropriation determines water allocation in these states and all other western states. States categorized as “East” in this research all utilize the Riparian Rights doctrine as the basis for water allocation. As such, the research expectation is that the distinctive water allocation mechanisms, priorities, and concomitant ecological and hydrological conditions and concerns unique to these two disparate water doctrines will have identifiable impacts on WMOs across the United States.

The remaining section of this paper recasts many of the preceding organizational characteristics presented in terms of location. The objective is to further develop these areas and identify new avenues of inquiry for researchers working in the field of watershed-based management and organization. A new dimension that is discussed relates to the resource concerns and information needs of WMOs and how these are influenced by region. Recent literature suggests that watershed needs may vary across regions, depending upon a predominant emphasis on water quality,

quantity, or a holistic incorporation of the two (Imperial 1999, Lubell and others 2002). By uncovering regional distinctions and patterns for a number of organizational characteristics, this research seeks to enhance the portrait of WMOs. Furthermore, if there is a clear difference in informational needs across regions, this may aid researchers to develop more regionalized information and site-specific hydrologic models for use by WMOs.

Issue Concerns and Levels of Activity

Respondents were asked to rank their organization's level of activity for issues within two general areas of concern: water *quality* (i.e., industrial pollution and urban or agricultural runoff) and water *quantity* (i.e., minimum in-stream flows, endangered species, or general water supply). From a nationwide perspective, 41.4% of organizations indicated a “high” level of activity for water quality concerns, 37.6% indicated a “moderate” level of activity, and 20.5% described their organization's level of activity as “little to none” for water quality concerns. For water quantity issues, 57.1% indicated a “high” level of activity, 37.6% indicated a “moderate” level, and 5.2% described their level of activity as “little to none.”

When classified by region, a pattern emerged regarding these issue concerns and related levels of organizational activity. For WMOs located in the East, a majority indicated higher levels of activity for issues related to water quality. On the other hand, WMOs in the West expressed higher levels of activity for issues associated with water quantity. Results are portrayed in Table 4.

Indeed, such a pattern between region and issue concern and related activity stems from unique ecological conditions and resource problems. A common concern of WMOs in the West relates to in-stream flows (and augmentation thereof) for endangered species such as salmon and steelhead and areas of critical habit. Alternatively, organizations in eastern states may be more likely to focus the majority of their activities on a host of water quality issues near large urban centers and/or related to areas of past and present industrial operations. Such a regional distinction between water quality and quantity concerns is consistent with the tone of issue concerns expressed in the mission statements from many of the groups studied. Looking solely at western states, Rieke and Kenney (1997) found that regional problems such as salmon in the Pacific Northwest and forest planning in particular states were the predominant foci for many organizations. In the present research, there was a similarly high percentage of

Table 4. Region: activity levels for water quality and quantity issues

Activity level for water quality		Activity level for water quantity	
East	Percent	East	Percent
Little to none	5.0	Little to None	29.0
Moderate	32.0	Moderate	43.0
High	63.0	High	27.0
	*N = 138		
West		West	
Little to None	5.0	Little to None	4.0
Moderate	49.0	Moderate	26.0
High	46.0	High	69.0
	*N = 72		

organizations from states such as Washington, California, and Idaho expressing concerns related to anadromous fish recovery—many of which are currently endangered—in their mission statements. Alternatively, many organizations located in eastern states such as Pennsylvania, Michigan, and Illinois reported issues related to water quality, primarily stemming from industrial pollution and/or abandoned coalmines. To further develop this linkage, future research may want to include additional items designed to capture more detailed elements related to these two water-related issue areas and concomitant levels of activity. The inclusion of questions related to the specifics of organizational mission statements would be a solid first step.

Additional statistical analyses indicated a positive correlation between location and level of activity in the areas of water quality and quantity. Specifically, bivariate analysis revealed a moderately strong and positive correlation between those organizations located in the more arid West and their level of activity for issues within the area of water quantity ($r = 0.41$; $p \leq 0.05$). Similarly, for those organizations located in the less arid eastern states, their level of activity is positively correlated with higher levels of activity for issues within the area of water quality ($r = 0.14$; $p \leq 0.05$).

Year of Formation

According to Rieke and Kenney (1997), the management of water and related resources on a regional basis is a concept with a long history and solid theoretical basis, yet at no other time than the present has it been so prevalently applied. As an approach to augment, and in some cases replace, traditional natural resource management strategies, the watershed approach appears to be diffusing across the country and abroad, as WMOs continue to form. This research sought to determine whether there is a discernable direction to this diffusion. In other words, is the wa-

tershed approach rooted in a particular region of the country and if so, in which direction is it increasingly applied?

Particular states such as Wisconsin and North Carolina have long histories of watershed-based resource management activities, dating back to the beginnings of the soil conservation movement (Born and Genskow 2000). In 1933 the U.S. Soil Conservation Service, predecessor to the NRCS, began a partnership with local stakeholders in a watershed in southwestern Wisconsin and in 1937, the first conservation district, bounded by a particular watershed in North Carolina, was created (National Resource Conservation Service 2004). Public concerns over endangered species and water supplies for critical habitat, which have been instrumental in prompting the formation of WMOs, would not enter the national debate for decades to come. Therefore, it is generally expected that WMOs located in eastern states will have longer histories, whereas those in western states will have more recent dates of formation. The findings evidenced through this research support such a notion.

Although the nationwide findings identified the mean year of formation as 1991, when categorized by region, the findings indicated that prior to 1990, 36% of eastern WMOs had already formed, compared to 17% of those in the West. Thus, it appears that the initial efforts to mobilize local stakeholders and devise natural resource management regimes along watershed boundaries in the eastern states prompted the formation of other WMOs at a comparatively earlier time in history than in western states.

In a related area, the findings suggest that the primary motivating factors for group formation in the West were largely proactive, and to a greater degree when compared to those listed by organizations in the East. Rieke and Kenney (1997) found that for WMOs in the West, the threat or anticipation of governmental

Table 5. Region: memberships

Range of membership			
East	Percent	West	Percent
1–5 members	4.0	1–5 members	1.0
6–25 members	27.0	6–25 members	36.0
26–75 members	19.0	26–75 members	35.0
76–150 members	16.0	76–150 members	7.0
151 members or greater	34.0	151 members or greater	21.0
	*N = 135		*N = 70

(often federal) intervention to address a natural resource issue—commonly an endangered species or water quality concern—was a powerful stimulus motivating the formation of an organization. In a region of the country where elements of the Sagebrush Rebellion can still be found, such a connection is to be expected. Specifically, the data indicate that the majority of WMOs located in western states (58%) formed due to the anticipation of future ecological damage, whereas the majority of those in eastern states (54%) were formed in response to existing natural resource or ecological problems (i.e., in a reactive manner).

Membership Size

When compared on the basis of location, the memberships of WMOs in the East are generally larger than in the West—a finding that is likely influenced by differences in regional population densities. Results are displayed in Table 5.

Budgets

When compared on the basis of location, the data indicate that WMOs in western states have somewhat larger annual operating budgets than those located in eastern states. Table 6 displays the results. Additional statistical analyses support this pattern, indicating a positive correlation between those organizations located in the West and larger annual operating budgets ($r = 0.140$; $p \leq 0.05$). Future research may seek to explain such a relationship between region and funding in terms of the grant opportunities funded by state governments and/or the overall receptivity to or promotion of WMOs by state governments. Additionally, the greater role of federal agencies in many watershed organizations in the West may also relate to their comparatively larger budgets, because the material support of federal agencies for WMOs in the West is well documented (Rieke and Kenney 1997, Kenney and others 2000).

To further explore the area of budgets, respondents were queried over the stability of their organization's funding. As Table 6 indicates, WMOs in the West—

despite their comparatively larger budgets—are less optimistic about budgetary stability and in fact, largely perceive that funding is decreasing, when compared to organizations in the East. Such a finding warrants future research, perhaps exploring the main sources of funding upon which WMOs depend and the political landscapes in which they operate, and whether these vary by region.

Public–Private Relationships

WMOs must operate in a maze of bureaucratic agencies and intergovernmental relations in pursuit of their objectives. Fundamentally, this relies upon collaborative decision-making among often-disparate sets of actors. With this critical dimension in mind, this research is interested in whether there is evidence of regional distinctions in the representation of state and federal agency personnel within WMOs and the general tone of working relationships.

For organizations located in western states, 73% reported the presence of state agency personnel in their memberships, whereas 65% of those in eastern states affirmed such a presence. Regarding personnel from federal agencies in their memberships, 64% of WMOs located in western states responded affirmatively. Further statistical analyses support this pattern, indicating a positive correlation between location in the West and the presence of personnel from federal agencies in WMO memberships ($r = 0.145$; $p \leq 0.05$).

The legacy of a strong federal role in water resource management and land ownership in the West supports such a pattern of high federal involvement in WMOs located in states west of the 100th meridian. According to Rieke and Kenney (1997), federal agencies “typically provide the majority of financial, technical, and ‘authority’ resources; and they often play a role in implementing selected resource strategies.”

For organizations in the East, a lower percentage (47%) affirmed the presence of federal personnel—including EPA and NRCS—in their memberships. Again, this may be partly attributable to the

Table 6. Region: budgets and stability of funding

Annual operating budget		Is funding stable?	
West	Percent	West	Percent
0–\$9,999	18.0	No, and funding is decreasing	44
\$10,000–\$19,999	11.0	No, yet funding is increasing	30
\$20,000–\$49,999	10.0	Yes	26
\$50,000–\$99,999	15.0		*N = 71
\$100,000–or more	45.0		
	*N = 71		
East		East	
0–\$9,999	31.0	No, and funding is decreasing	21
\$10,000–\$19,999	5.0	No, yet funding is increasing	39
\$20,000–\$49,999	20.0	Yes	38
\$50,000–\$99,999	12.0		*N = 136
\$100,000–or more	32.0		
	*N = 136		

much lower proportion of public lands in the East versus the West, and the concomitant federal involvement, especially from agencies within the Departments of Interior and Agriculture. Furthermore, although federal agencies are often involved in western WMOs, almost by default due to large federal landholdings, an eastern WMO boundary could conceivably not include any federal land. Future research may seek to determine whether the connection suggested by Moore and Koontz (2003), between agency membership in WMOs and the means and degree of policy impact these elicit, applies when organized on the basis of region. Additionally, future research may look at the frequency of personnel from agencies such as the NRCS and EPA in the memberships of WMOs in eastern states and the subsequent tone of working relationships.

Regarding the characterization of working relationships, the clear majority of organizations (93%) in both the West and East indicated that the working relationships between state agencies and other WMO members were generally supportive, positive, and often productive. For working relationships between federal personnel and other WMO members, 82% of organizations in the West described these as generally supportive, positive, and often productive, whereas 94% of organizations in the East categorized their relationships in this manner.

Organizational Principles and Decision-Making Mechanisms

At the national scale, the data confirmed the principles of collaboration, inclusion, and consensus-driven decision-making of the watershed management approach (73.3%). When organized at the regional scale, slightly different results emerged. For WMOs in the

West, 83.3% confirmed the centrality of these principles (N = 72). This figure was noticeably less for organizations located in the East, with 68.1% verifying such principles (N = 138). Regarding the actual procedures or mechanisms for decision-making, a related portrait emerges. Results are displayed in Table 7.

Like the nationwide profile, there emerged a similarly high percentage for “voting among boards of directors only” as the primary decision-making mechanisms for WMOs. Beyond this, the data suggest a significantly more prominent role for consensus-based decision-making in organizations located in the West than for those in the East. Additional statistical analysis supports this pattern, because the data indicate a positive correlation between organizations located in the West and the prominence of decision-making mechanisms that are largely consensus driven ($r = 0.238$; $p \leq 0.05$). Future research may uncover explanations for the prominence of consensus-driven decision-making among groups in the West versus those in the East. Perhaps the choice (or necessity) of decision-making mechanisms is contingent upon the composition or demographics of stakeholders involved and the issues they represent, both of which may vary by region. In addition, selection of decision-making mechanisms may vary due to population densities and the sheer size of organizations, because the WMOs from eastern states surveyed in this research had comparatively larger memberships and less reliance on consensus-based decision-making.

Conclusion

The first section of this paper presented a nationwide portrait of contemporary WMOs, based on an

Table 7. Region and primary decision-making mechanism

Mechanism	Percentage
West	
Single vote by one designated member	1.0
Voting among board of directors only	41.0
Simple majority (51% minimum approval of all members)	9.0
Super majority (80% minimum approval of all members)	20.5
Total consensus or unanimity among all members	28.5
	*N = 72
East	
Single vote by one designated member	2.0
Voting among board of directors only	58.0
Simple majority (51% minimum approval of all members)	22.0
Super majority (80% minimum approval of all members)	3.0
Total consensus or unanimity among all members	15.0
	*N = 132

array of basic organizational characteristics. When further divided into regional categories, the expectation was for identifiable patterns to emerge between organizations located in the West and those in the East. Indeed, regional variation along several dimensions is evidenced by the findings. The most significant areas of variation suggest that the watershed approach became established at an earlier date for organizations in the eastern United States, with many having grown to include large memberships that focus on issues predominantly related to water quality. Perhaps due to the heightened presence of public land ownership and resource management, WMOs in the West exhibit larger operating budgets and a higher frequency of both state and federal agency personnel and paid consultants within their comparatively smaller overall memberships. These areas warrant future inquiry, and researchers are encouraged to further evaluate the relationships between region and the composition, funding, issue concerns, decision-making structures, and information needs of WMOs across the United States. In the future, WMOs may utilize such information and assess their organizational dynamics and accomplishments in relation to those from other parts of the country. As a starting point, this research has suggested a series of factors to serve as the basis for a regionally inspired understanding.

A regional assessment of WMOs will prove valuable, as both the number and prominence of these innovative, place-based initiatives continue to increase. The identification of regionally based trends, issue concerns and resource problems, information needs and knowledge gaps, funding sources, and collaborative management arrangements all have the opportunity to benefit local organizations and advance the contemporary paradigm of resource management at the watershed level. For the funding opportunities and

political support upon which these organizations and the emergent paradigm depend, additional research may reveal regional variations across the United States.

In addition, research scientists who develop and provide scientific information and models to support resource management decisions will benefit from such regional findings. This knowledge will enable scientists to better disseminate their findings and design products for organizations based on unique regional information needs and resource issues. At the broadest level, the identification of regional patterns or organizational similarities is likely to facilitate the linkage among organizations to coordinate their actions at the (larger) river basin or ecosystem scale—a logical next step in evolution of the locally driven, collaborative, and place-based movement to manage natural resources.

Literature Cited

- American Rivers. 2002. <http://www.americanrivers.org> Accessed 1 September 2002.
- Bentrup, G. 2001. Evaluation of a collaborative model: a case study analysis of watershed planning in the Intermountain West. *Environmental Management* 27:739–748.
- Born, S. M., and K. D. Genskow. 1999. Exploring the watershed approach: Critical dimensions of state-local partnerships, The Four Corners Watershed Innovators Initiative Final Report. River Network, Portland 124 pp.
- Born, S. M., and K. D. Genskow. 2000. The watershed approach: An empirical assessment of innovation in environmental management. Learning from innovations in environmental protection, research paper #7. National Academy of Public Administration, Washington, DC 70 pp.
- Chess, C., and G. Gibson. 2001. Watersheds are not equal. *Journal of the American Water Resources Association* 37:775–782.
- Clarke, J. N., and D. C. McCool. 1996. Staking out the terrain: Power and performance among natural resource agencies. 2nd ed. SUNY Press, New York 279 pp.

- Coburn, J. 1999. Integrating science into watershed management decisions at Lake Tahoe. In E. Kendy (ed.), *Science into policy: Water in the public realm*. American Water Resources Association, Herndon, VA.
- Dillman, D. A. 2000. *Mail and Internet surveys: The tailored design method*. 2nd ed. John Wiley, New York 464 p.
- Duram, L. A., and K. G. Brown. 1999. Assessing public participation in US watershed planning initiatives. *Society and Natural Resources* 125:455–467.
- Griffin, C. B. 1999. Evaluating watershed councils. Pages 227–232 in E. Kendy (eds.), *Science into policy: Water in the public realm*. American Water Resources Association, Herndon, Virginia.
- Habron, G. 2003. Role of adaptive management for watershed councils. *Environmental Management* 31:29–41.
- Holland, M. M. 1996. Ensuring sustainability of natural resources: Focus on institutional arrangements. *Canadian Journal of Fisheries and Aquatic Science* 53:432–439.
- Imperial, M. T. 1999. Institutional analysis and ecosystem-based management: The institutional analysis and development framework. *Environmental Management* 24:449–465.
- Information Center for the Environment. 2002. <http://www.ice.ucdavis.edu>. Accessed 20 September 2002.
- John, D. 1993. *Civic environmentalism: Alternatives to regulation in states and communities*. CQ Press, Washington, DC 347 pp.
- Johnson, B. R., and R. Campbell. 1999. Ecology and participation in landscape-based planning in the Pacific Northwest. *Policy Studies Journal* 27:502–529.
- Kennedy, D., S. T. McAllister, W. H. Caile, and J. S. Peckman. 2000. *The new watershed source book: A directory and review of watershed initiatives in the western United States*. Natural Resources Law Center, Boulder 344 pp.
- Korfmacher, K. S. 1999. Public participation in watershed modeling: What is appropriate? In E. Kendy (ed.), *Science into policy: Water in the public realm*. American Water Resources Association, Herndon, VA.
- Landre, B. K., and B. A. Knuth. 1993. Success of citizen advisory committees in consensus-based water resources planning in the Great Lakes Basin. *Society and Natural Resources* 63:229–257.
- Leach W. D., and N. W. Pelkey. 2001. Making watershed partnerships work: A review of empirical literature. *Journal of Water Resources Planning and Management* November/December:378–385.
- Lubell, M., M. S. Schneider, J. T. Scholz, and M. Mete. 2002. Watershed partnerships and the emergence of collective action institutions. *American Journal of Political Science* 461:148–163.
- Mazmanian, D. A., and M. E. Kraft. 1999. *Toward sustainable communities: Transition and transformations in environmental policy*. MIT Press, Cambridge 323.
- Michaels, S. 1999. Configuring who does what in watershed management: The Massachusetts Watershed Initiative. *Policy Studies Journal* 27:565–577.
- Moore, E. A., and T. M. Koontz. 2003. A typology of watershed groups: Citizen-based, agency-based, and mixed partnerships. *Society and Natural Resources* 16:451–460.
- National Resource Conservation Service. 2004. *A story of land and people*. Accessed 22 June 2004. <http://www.nrcs.usda.gov/about/history/story.html>.
- Randolph, J., and M. Bauer. 1999. Improving environmental decision-making through collaborative methods. *Policy Studies Review* 16:12–29.
- Rieke, E. A., and D. S. Kenney. 1997. Resource management at the watershed level: an assessment of the changing federal role in the emerging era of community based watershed management: Report to the Western Water Policy Review Advisory Commission. The Commission, Springfield 198 pp.
- River Network. 2002. <http://www.rivernetwork.org>. Accessed 20 September 2002.
- Scheberle, D. 1997. Federalism and environmental policy: Trust and the politics of implementation. Georgetown University Press, Washington, DC 207 pp.
- Selin, S. W., M. A. Schuett, and D. S. Carr. 1997. Has collaborative planning taken root in the national forests?. *Journal of Forestry* 5:25–28.
- Sheehan, K. 2001. E-mail survey response rates: A review. *Journal of Computer Mediated Communication* 6:44–51.
- Singleton, S. 2000. Cooperation or capture? The paradox of co-management and community participation in natural resource management and environmental policy-making. *Environmental Politics* 9:319–328.
- Steelman, T. A., and J. Carmin. 2002. Community based watershed remediation: Connecting organizational resources to social and substantive outcomes. In D. Rahm (ed.), *Toxic waste and environmental policy in the 21st century*. McFarland, 284 pp.
- Thomas, C. W. 1999. Linking public agencies with community based watershed organizations: Lessons from California. *Policy Studies Journal* 27:544–565.
- Weber, E. P. 1998. Successful collaboration. *Environment* 40:10–18.
- Weber, E. P. 2000. A new vanguard for the environment: Grass-roots ecosystem management as a new environmental movement. *Society and Natural Resources* 13:237–259.
- Wooley, J. T., and M. V. McGinnis. 1999. The politics of watershed policy making. *Policy Studies Journal* 3:578–594.