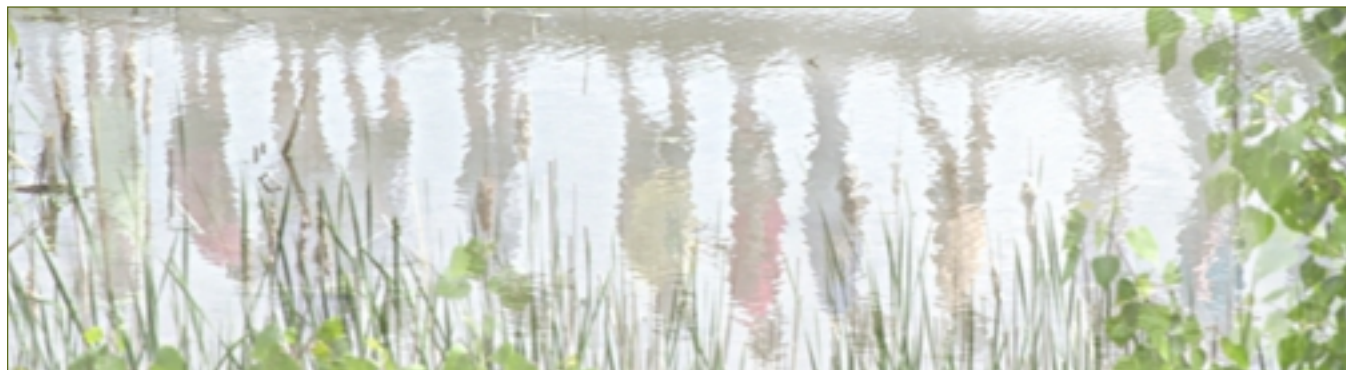


# Watershed Groups in Ohio: An Assessment of Current Practice

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## Introduction

Over the past decade, there has been a trend towards collaborative, community-based natural resource management. This trend reflects, in part, the failure of traditional approaches to resources management. Much of traditional resource management in the United States has been characterized by top-down, centralized, command-and-control strategies. While this approach was quite successful in ameliorating many environmental problems in the past, critics argue that it is insufficient for addressing the more complex and diffuse resource issues, such as non-point source pollution. In response, many federal and state resource management agencies are adopting collaborative, community-based management approaches, such as watershed management.

In response to this trend, policy-makers are developing programs to support and encourage ecosystem management and collaborative partnerships. For example, all four of the primary U.S. federal land management agencies – The National Park Service, the Bureau of Land Management, the Forest Service, and the Fish and Wildlife Service – are using or have declared that they will use an ecosystem approach to management (U.S. GAO 1994). In late 2000, the Secretaries of both Agriculture and Interior announced a unified policy for land and resource management that focuses on watersheds. The policy, entitled “Watershed Approach to Land and Resource Management,” calls for agencies to work with state and local governments, citizens, and other interest groups to coordinate efforts to protect and manage natural resources.

States, too, have embraced such an approach for addressing watershed issues, in many instances actively promoting watershed group creation and development. Ohio has been a leader in this area through the support and development of watershed groups around the state. For example, in 2000, the State of Ohio initiated a watershed coordinator program to provide financial support and training for watershed coordinators throughout the state.

Watershed management programs and policies are allowing local governments, citizens, industry, and other stakeholders to play a more active role in environmental policy and decision-making. However, this process is relatively new and not well understood. Although there are many active watershed groups in Ohio and around the country, there is still a lack of information about these groups. In order to build on the experiences of watershed groups and to help inform practice in this area, there is a need for greater understanding of the activities of watershed groups. In recognition of this need, a study of Ohio watershed groups was conducted through the School of Natural Resources’ ECARP Working Group (formerly the Ecological Communications Lab) at the Ohio State University. This study was part of a Master’s research project by Moore (2001) that explored the role of watershed groups in policy-making in Ohio.



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Moore (2001), in conducting this research, studied all known watershed groups in Ohio that were identified through a variety of sources, including the Ohio EPA, the Ohio Environmental Council, website searches, and others. A questionnaire was sent to all groups that identified themselves as a watershed group. Thus, the only selection criterion for inclusion in this study was self-identification as a watershed group. A questionnaire was sent to 136 groups and 69 of these groups returned completed questionnaires. The questionnaire sought information on the following ten group characteristics: 1) demographics; 2) group origin; 3) stakeholder representation; 4) group type; 5) issues; 6) goals and objectives; 7) budget and finances; 8) importance and use of strategies; 9) barriers; and 10) outcomes. This assessment is a summary of the descriptive findings of this questionnaire. Specifically, this assessment addresses the following questions:

- 1) What are the characteristics of the groups?
- 2) What issues are groups addressing?
- 3) What are groups' goals?
- 4) What strategies are groups using to achieve goals?
- 5) What barriers are groups facing?
- 6) What outcomes are groups achieving?

In addition, results from this study are compared with previous studies to determine on what dimensions groups in Ohio are similar and different to other groups across the United States.

## Characteristics of the Watershed Groups

There was much diversity among the 69 watershed groups surveyed. Project areas range from less than one square mile to several thousand square miles. Many groups had no funding, while others had quite a substantial amount of funding. Some groups were composed entirely of local citizens, while others had several different stakeholders participating. Despite this diversity, some common themes emerged. For example, many groups were relatively young, only recently forming within the last 5 years. Below is a description of various characteristics of groups surveyed, focusing on when and how groups formed, who is participating, what types of groups exist, size of projects, and funding.

### When did the groups form?

Most groups are in the early stages of group development. The largest proportion of groups (38%) was formed since 1995 (see Figure 1).

Another 28% formed between 1990 and 1994 and the remaining 34% formed between 1955 and 1989. It is not clear why so many groups formed in 1970-1974, but it is possible that this coincides with the passage of major amendments to the Clean Water Act in 1972.

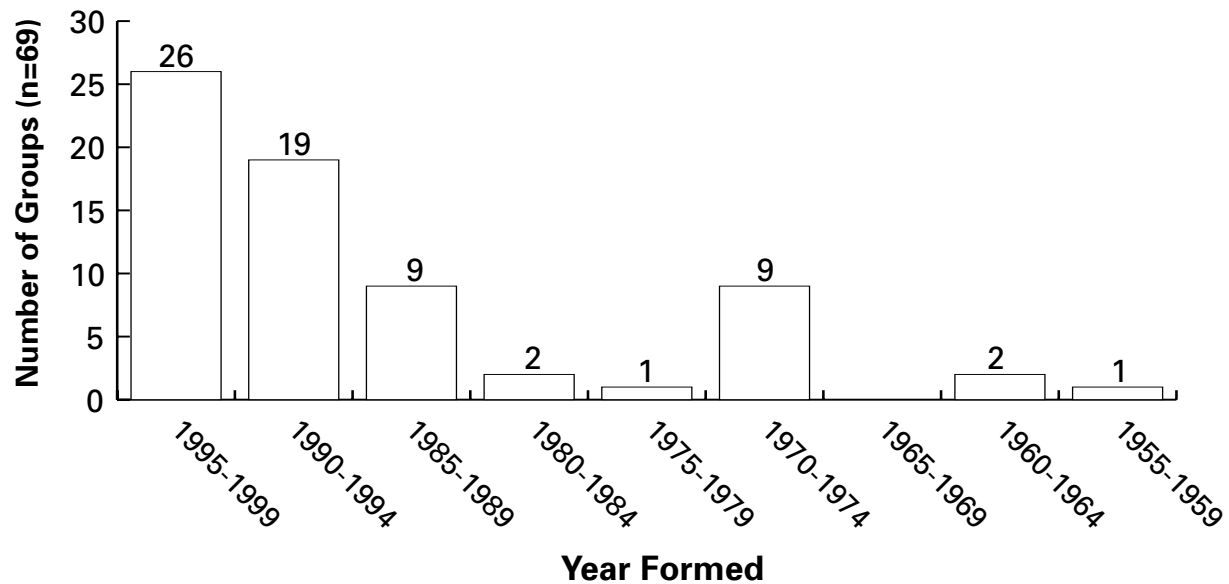


Figure 1. Year group formed

### Why were the groups formed?

The reasons why watershed groups form can influence many aspects of the group. This often sets the stage for the group's focus and mission. While there are a number of factors influencing the initiation of watershed groups, respondents were asked to report the *primary* reason why the group was formed. Responses were classified into five different categories, as shown in Figure 2.

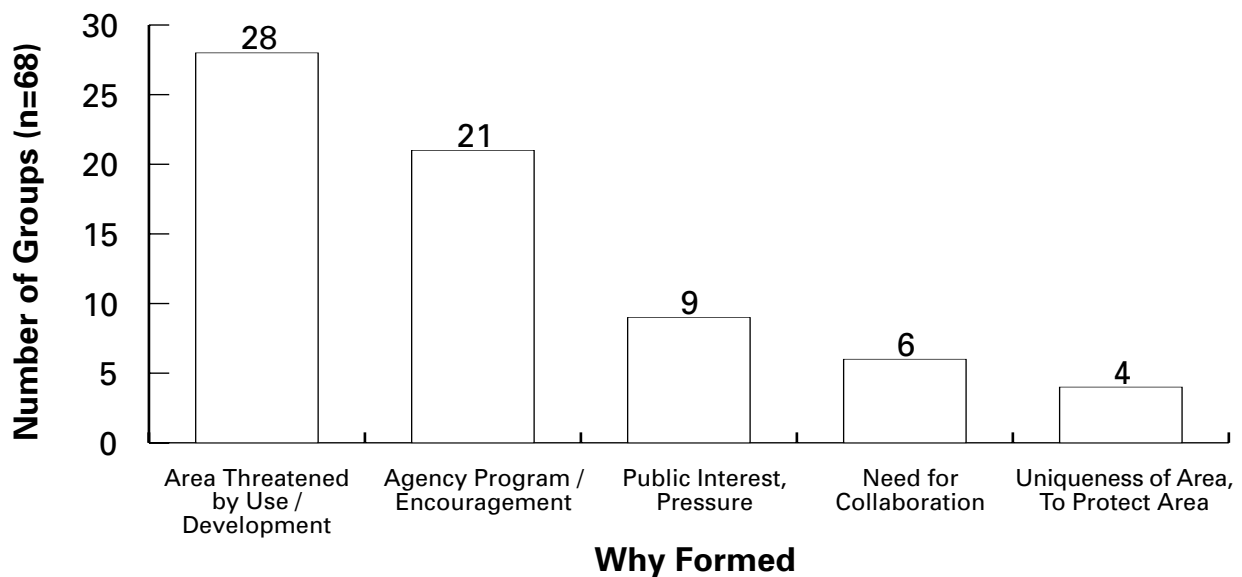


Figure 2. Why groups formed



Most (42%) were motivated by a perceived threat to the area from existing land use practices and development threats. In addition, encouragement from agencies through programs or policies provided an opportunity for groups to form (31%). Other reasons provided were interest and pressure from the public to start a group (13%), a recognized need to collaborate with other stakeholder groups (9%), and a need to protect the area (6%).

### Who was responsible for forming the groups?

Citizens/activists were responsible for initiating the largest proportion of groups (38% of groups), followed by state agencies (17% of groups) and non-governmental organizations (14% of groups) (see Figure 3).

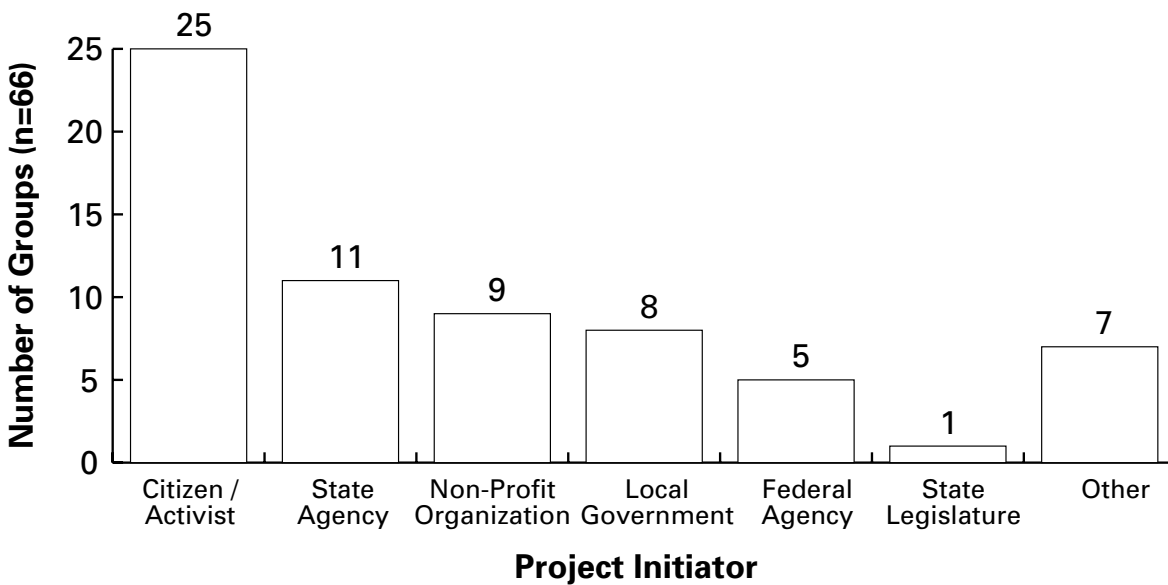


Figure 3. Who formed group





### Who is participating in the groups?

A watershed approach emphasizes working with multiple stakeholders from both the public and private sectors. It is interesting to examine what types of stakeholder groups are participating in watershed groups and assess how inclusive they are.

Respondents were provided a list of general categories of stakeholders and asked to check which types have representatives participating in their watershed group. These stakeholder types included: federal agencies, state agencies, local agencies, environmental organizations, other non-governmental organizations, businesses, industry (i.e. agriculture), citizens, and other. Results indicate that there are a number of different types of stakeholders involved in watershed groups.

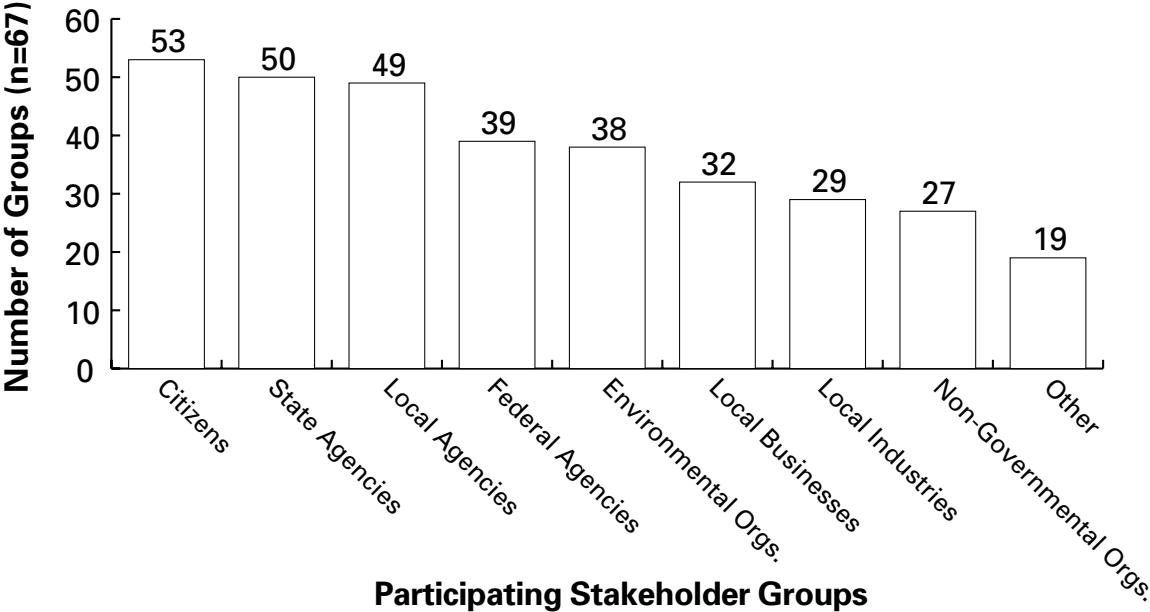
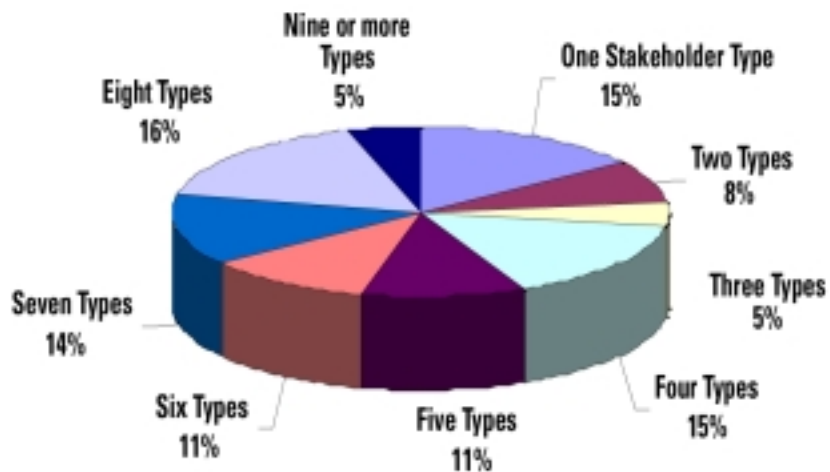


Figure 4. Stakeholder groups participating in watershed groups

Citizens, state agencies, and local agencies were the most frequently represented stakeholders. As shown in Figure 4, citizens were the most represented stakeholder, participating in 77% of the watershed groups. State agency representatives were second, participating in 72% of groups, followed by local agency representatives, who participated in 71% of groups.



Another interesting dimension of stakeholder representation is the number of different types of stakeholders represented in a watershed group. On this measure, there was a great deal of diversity among groups. Some groups are very diverse with nine or more different types of stakeholders participating, while others are less diverse with as few as one stakeholder type represented (see Figure 5).



**Figure 5.** Number of stakeholder types represented per watershed group

### What types of group exist?

Watershed groups vary greatly in their level and type of stakeholder involvement, as is demonstrated above. Some groups are more characteristic of grass-roots community-based organizations, while others are characteristic of interagency collaborations. Although it is difficult to categorize watershed groups, it can be helpful to do so in order to differentiate among them to help identify the strengths and weaknesses of various approaches. For example, in *Rapid Watershed Planning Handbook*, the Center for Watershed Protection outlines three different types of management structures for watershed management based on attributes of their membership: government-directed, citizen-directed, and hybrid.



One of the objectives of the study at hand was to more explicitly characterize different types of watershed groups and their accomplishments in different contexts, in order to inform practice in this area. In this vein, a group typology was developed for this study, based on member composition. Respondents were asked to indicate whether their group is composed 1) primarily of citizens; 2) of a mix of public and private representatives; 3) primarily of agency representatives; or 4) other (not best described by the previous three categories).

Of the 66 groups that responded to this question, 38% are composed primarily of citizens, 46% are a mix of public and private representatives, 14% are composed primarily of agency representatives, and 3% categorized their group as "other."

**How big are group focus areas?**

There was considerable variation across groups with regards to the size of the focus area, ranging from less than one square mile to almost 7,000 square miles. The majority of groups had focus areas less than 300 square miles. Of these, the greatest proportion had focus areas less than 50 square miles (see Figure 6).

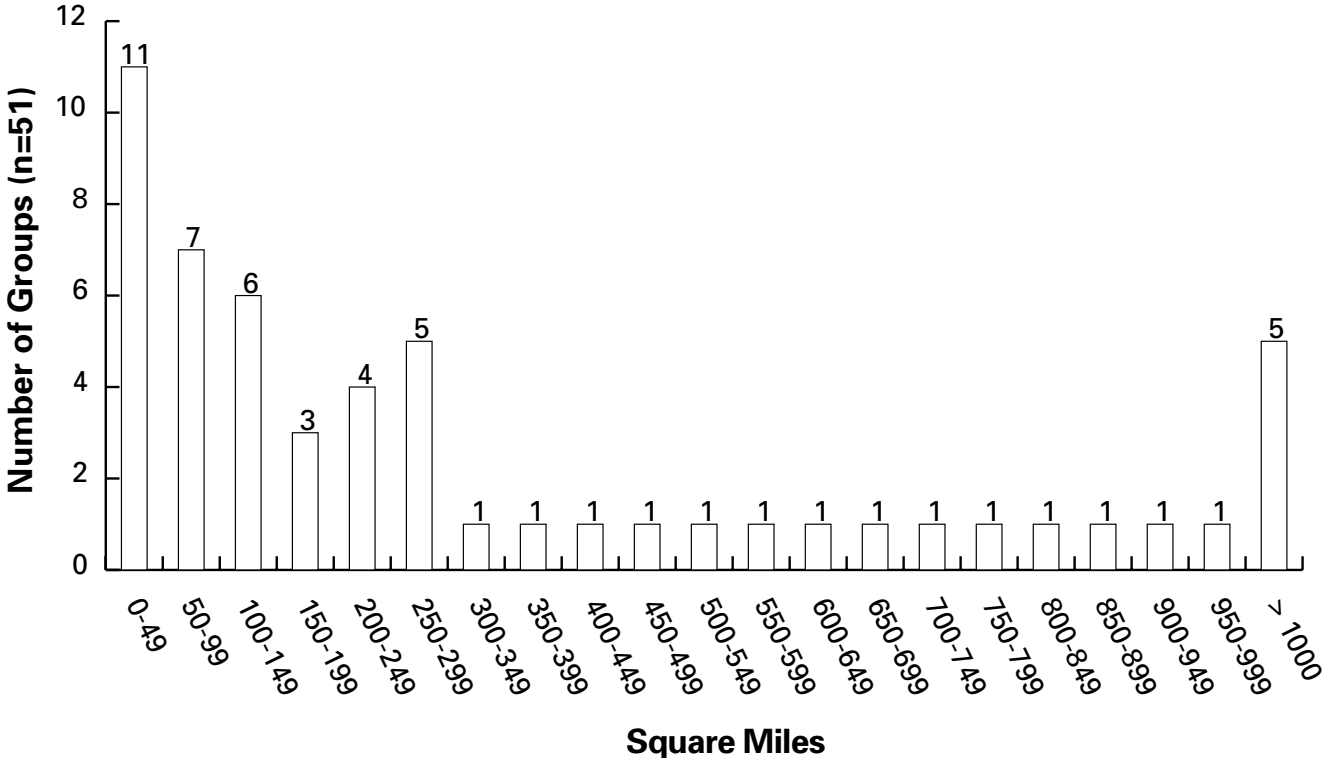


Figure 6. Size of focus area



### How are the groups funded?

Funding can be an important resource for any group. The survey asked watershed groups to indicate the amount of financial resources available to each group annually, as well as which organizations are providing each group with funding. In addition, groups were asked to report whether or not they had non-profit status. Among the 68 groups that responded, the greatest proportion of groups reported having “no budget,” followed by an annual budget of less than \$20,000 (see Figure 7). Among federal, state and local sources, local agencies and programs provided funds to the greatest proportion of groups (55% of groups), followed by state agencies and programs (51% of groups), with federal agencies and programs supporting the least number of groups (32%).

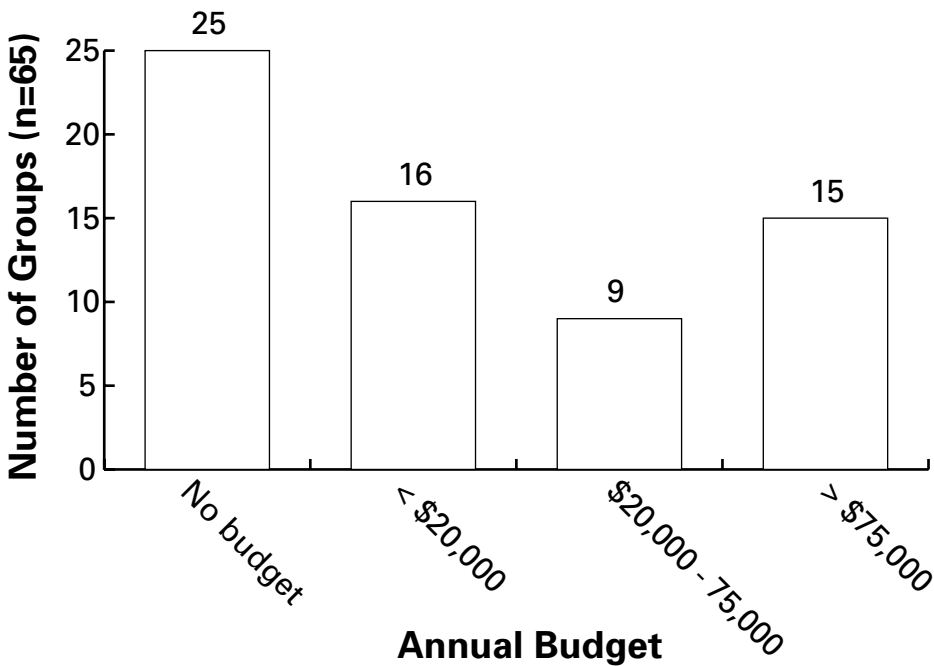


Figure 7. Annual budget

A large number of groups (50%) received funds from “other” resources, for example membership dues, fundraisers, and donations. In addition, 55% of groups had non-profit status, 33% did not, and 6% were in the process of applying for non-profit status (65 groups responded to this question).

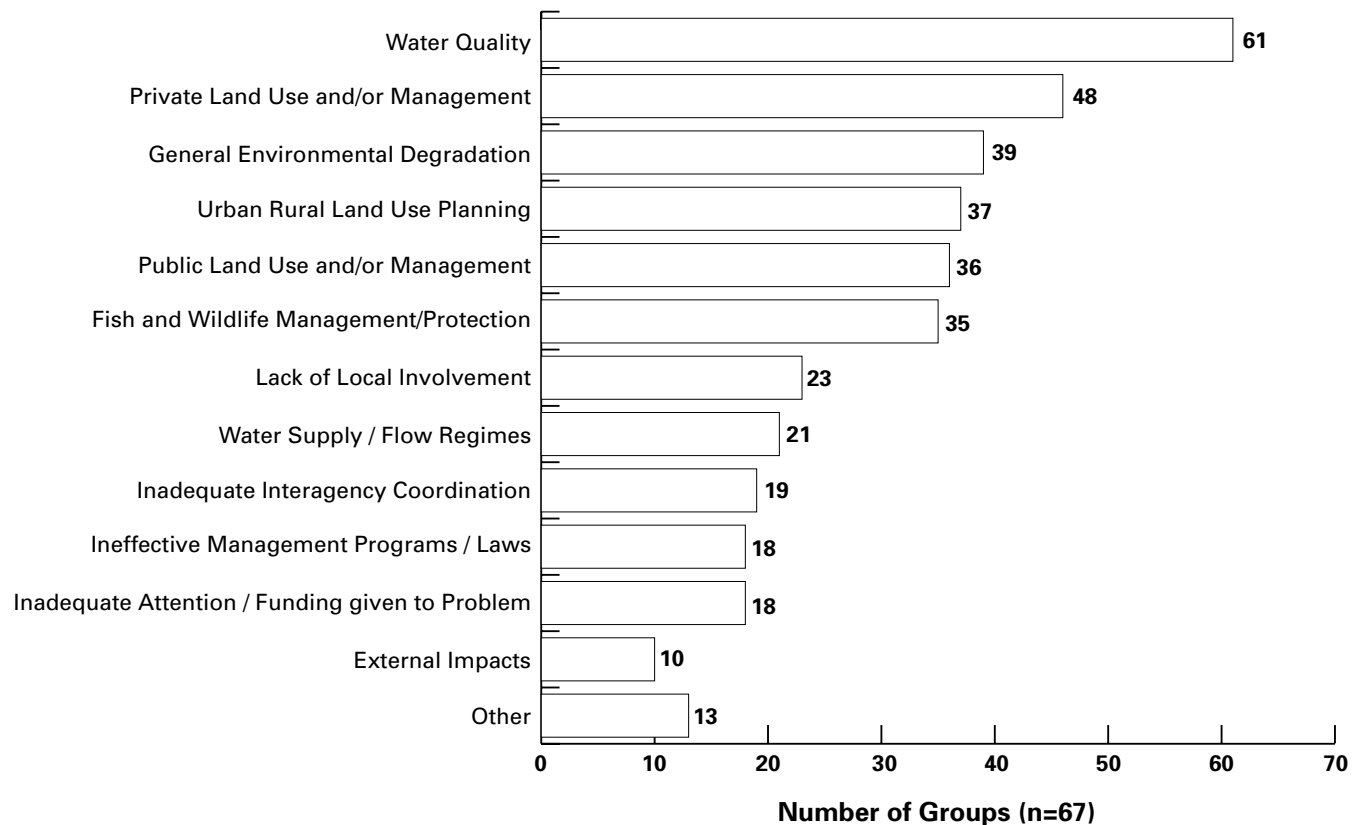


## Issues and Problems of Concern

### What issues are groups addressing?

Watershed groups are tackling a number of different issues. Respondents were provided a list of issues and asked to check those that their group was addressing.

**Figure 8.** Issues and problems of concern



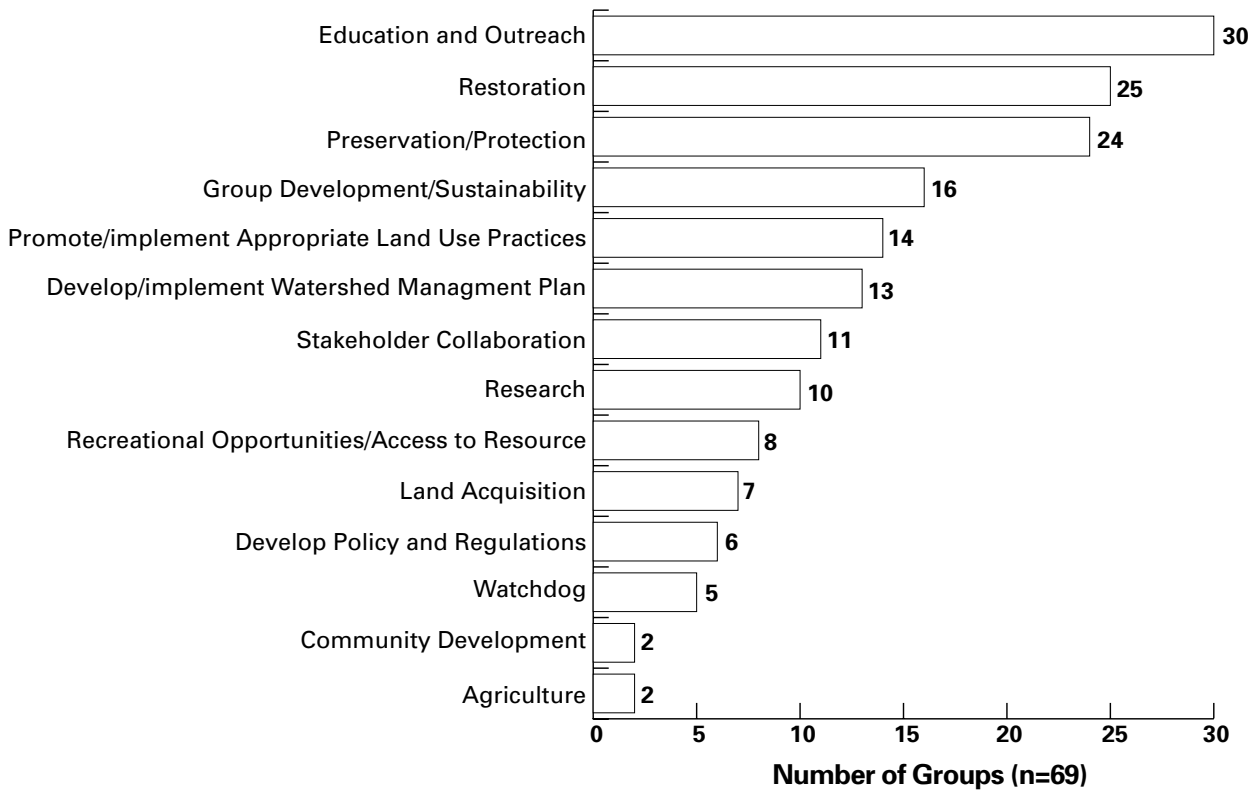
The three most common issues Ohio groups are addressing include water quality (91% of groups), private land use/management (69% of groups), and general environmental degradation (58% of groups) (see Figure 8). This is consistent with watershed management's focus on water resource issues and the high level of private property and non-point source pollution runoff found in Ohio.



## Goals

### What are Ohio watershed groups' goals?

Watershed groups have a variety of goals aimed both at addressing issues of concern as well as developing and sustaining the organization.



**Figure 9.** Goals

Respondents were asked to list their short-term and long-term goals. These goals were then classified into 14 different categories, as shown in Figure 9. The top goal for Ohio watershed groups centers on education and outreach (44%), followed by restoration (36%), preservation and protection (35%), and then group development and sustainability (23%).



# Strategies

## What strategies are watershed groups using to achieve their goals?

To achieve their goals, watershed groups employ a diversity of strategies. Respondents were provided a list of different strategies and asked to rank, on a scale of 1 (“never”) to 4 (“regularly”), the extent to which they use each strategy. Figure 10 below indicates the number of groups that reported their use of each strategy as either 4 (“regularly”) or 3 (“sometimes”).

Publication of newsletters and education are the most frequently used strategies. This was followed by stakeholder involvement. These strategies fit well with an emphasis on the importance of working with multiple stakeholders to coordinate efforts and develop management strategies that incorporate the perspectives of all interested and affected parties.

Monitoring, research, and restoration strategies were the next most frequently used strategies. These strategies require more scientific and technical capacity of groups and may be more challenging than education and outreach for some groups that lack technical assistance.

More adversarial strategies, such as lobbying, letter writing campaigns, lawsuits and referendums ranked the lowest in use among watershed groups. Because a collaborative watershed approach favors coordination of multiple stakeholders, these more traditional interest group strategies may not be employed as frequently. In addition, many groups have non-profit status and are limited, by law, in the amount of lobbying they can do.

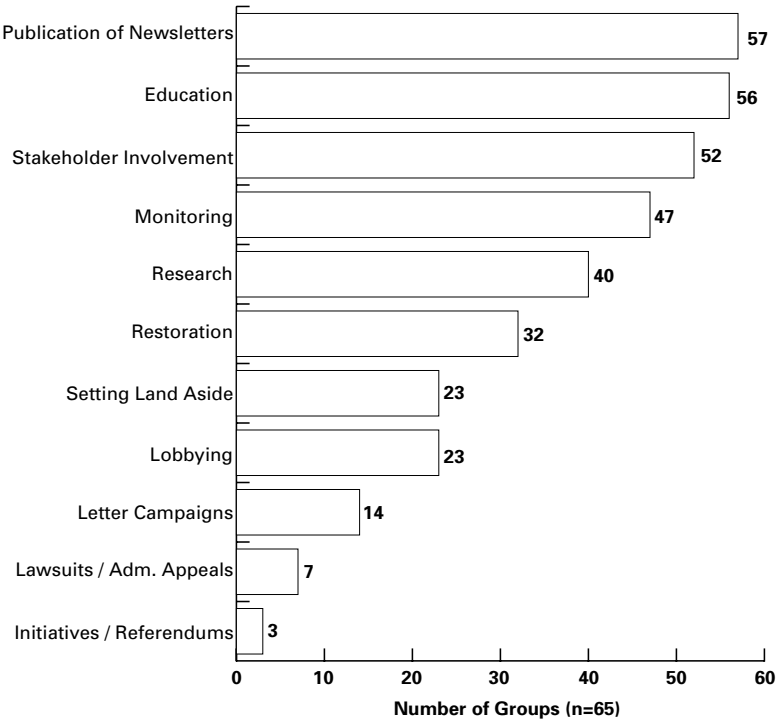


Figure 10. Strategies reported as being used “regularly” or “sometimes”

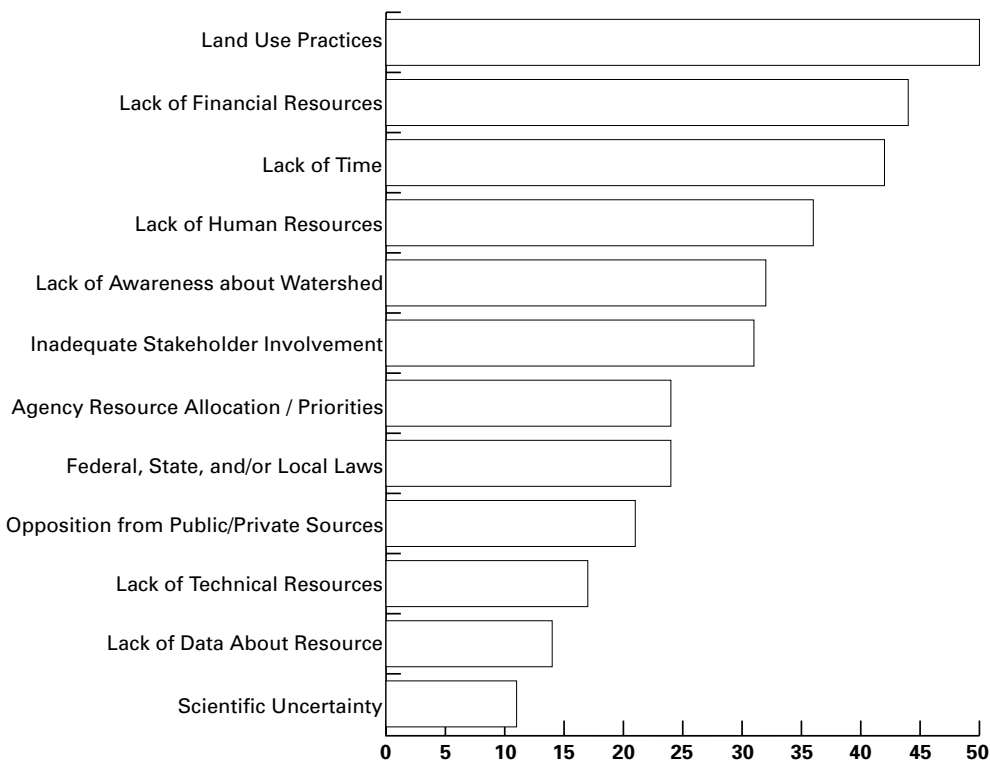


## Barriers

### What types of barriers are watershed groups facing?

Establishing and maintaining a watershed group is not an easy task. If watershed groups are to succeed, it is helpful to identify the most important barriers they face. Knowledge of the types of barriers that watershed groups are faced with can help agencies and other organizations target assistance to these groups.

Survey respondents were given a list of barriers and asked to rank the significance of each of the barriers to achieving their group's goals, on a scale of 1 to 4, with 1 = not a barrier, 2 = a minor barrier, 3 = significant barrier, and 4 = major barrier. Figure 11 indicates the number of groups that ranked each barrier as "significant" or "major."



**Figure 11.** Barriers ranked as "significant" or "major."

Existing land use practices are ranked as the most challenging barrier that groups are facing. This is understandable given that the second highest ranking issue that groups address (recall Figure 8) is private land use and management. Lack of resources – financial resources, time, and human resources – comprise the next three highest barriers groups face. Interestingly, barriers associated with the technical aspects of watershed management, including data and technical resources, ranked as the least challenging obstacles for groups.





# Outcomes

## What are watershed groups accomplishing?

It is difficult to measure success in watershed management because it depends on one’s definition of success. The ultimate measure of success, perhaps, is improved water quality and watershed health. However, this may take years to detect. There are many other types of successes for watershed groups, ranging from the development of a management plan to improved communication among stakeholders, that are more readily measured.

Rather than the researcher providing a definition of success, respondents were asked to describe, in their own words, their group’s most important accomplishments. These outcomes were grouped into categories, and the results can be seen in Figure 12. Of course, some groups may be producing the same or similar outcomes, but not reporting these as important accomplishments.

The most frequently reported outcome centered on group development and sustainability. It is very challenging to get a watershed group started. It can often take several years before a group gets “on its feet.” Items in this category included “acquisition of funds,” “hiring a coordinator,” “recruiting volunteers,” and “staying alive.” The next most frequently cited outcome was “education and outreach” followed by “increased public awareness.” This is not surprising given that education was the top goal for many groups (recall Figure 9) as well as among the most commonly used strategy (recall Figure 10)

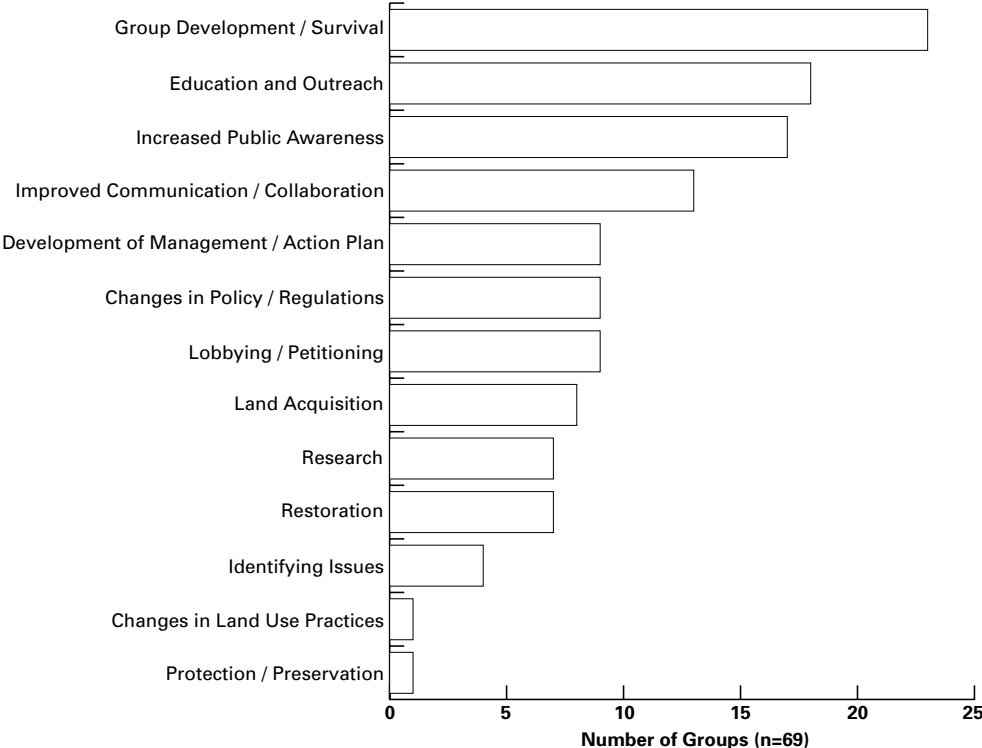


Figure 12. Outcomes



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## Discussion

The results of this study help to shed light on watershed groups in Ohio and across the U.S. Focusing on one state helps create a framework with which to better understand watershed groups. This is because each group is influenced by similar statewide political and regulatory factors. Results from this study are compared with previous studies to show how Ohio groups compare with other collaborative partnerships across the United States.<sup>1</sup> In addition, a discussion of the results from Ohio and implications for planning and management are provided.

### Comparing Ohio to Other Locations

Many watershed groups in Ohio are in the early stages of development, forming within the last seven years. This is consistent with previous studies which report that most groups formed within the past ten years (Yaffee et al 1996; Johnson and Campbell 1999; Kenney 1999). It is difficult to associate the age of the group to other aspects, such as barriers or outcomes, since each group is unique and can develop at a different rate depending on many factors, such as funding or leadership. Nevertheless, this group age may explain some of the results, such as why so few groups report the development and implementation of a management plan as one of their goals or outcomes.

One of the most striking features of Ohio groups is the high level of citizen involvement. Citizens were the largest represented stakeholder type among groups (77% of watershed groups included private citizens). They also were responsible for forming the largest proportion (38%) of the groups. This differs from other regions of the country, where private citizens do not appear to have such a heightened role in watershed management. For example, Duram and Brown (1999) conducted a survey of 64 watershed groups across the U.S. and found that citizens were responsible for forming only 5% of the groups. In addition, Yaffee et al. (1996) surveyed ecosystem management projects (which included watershed groups) across the United States and found citizens to be the second *least* represented stakeholder (27% of groups included private citizens) among projects analyzed.

In contrast to the large role of private citizens, federal agencies play a smaller role in Ohio groups compared to partnerships across the United States. This supports results from Yaffee et al. (1996) that found the Midwest (which included Ohio) to be the only region in which federal agencies were not the primary initiator of ecosystem management partnerships. It is important to consider this degree of involvement when analyzing partnerships, because it can have an influence on how a group functions.



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Another interesting characteristic of Ohio groups is the emphasis on education. The most commonly cited goal among Ohio groups was “education” (43.5%). In Yaffee’s assessment, education was the second *least* cited goal, included in only 8% of the projects. Duram and Brown (1999) found education to be a goal for only 9% of the groups in their survey. In addition, education was among the top strategies used by Ohio groups and the second most frequently reported outcome.

This strong emphasis on education may be due in part to the types of issues groups are facing, such as non-point source pollution, as well as the high proportion of private property in Ohio. However, it is not clear why this differs so dramatically from other regions.

Groups in Ohio appear to be focusing less on development and implementation of management plans compared to other regions. Few Ohio groups (19%) listed development or implementation of watershed management plan as a goal or objective. Furthermore, only 13% of groups listed this as an outcome or success. This is notable because, by most definitions, a primary outcome of watershed and ecosystem management is to develop resource management strategies. The Ohio data contrasts with Yaffee et al., who found “development of a management plan” to be the second most frequently cited outcome, occurring in 61% of projects. Duram and Brown (1999) found that 65% of groups were implementing, preparing or updating a plan.

The relatively low emphasis on development of management plans in Ohio is puzzling and warrants further investigation. As suggested above, it may be due in part to the age of the group. However, Ohio is similar to other partnerships across the U.S with respect to group age. It can also be argued that groups have, in fact, developed plans, even though they did not list this as a goal, objective, or outcome. Nevertheless, not listing plans suggests that this may not currently be a “priority.” Or perhaps groups consider “planning” as the overarching framework under which they work. They may be involved in watershed planning and implementation without developing a plan to do so.

Another possible explanation for low emphasis on plan development may be due to differences in samples across each study. While previous studies selected groups for analysis based on certain criteria such as types of groups involved (Yaffee et al. 1996) or funding source (Duram and Brown 1999), this study did not do so. Instead, all groups included in this study were designated by an agency or organization as an active watershed group in Ohio. From an applied perspective, construing the population broadly is important because resource management agencies are looking towards these groups to implement watershed management plans for their watersheds (see OEPA 1997). While the groups included in the Ohio study are addressing resource related issues at a watershed scale, some may be more characteristic of advocacy and interest groups rather than planning organizations (see Moore and Koontz forthcoming, for more detail).



	<u>Ohio Survey</u>	<u>Nationally</u>
<b>Year Formed</b>	Many within the last 10 years	Many within the last 10 years*
<b>Group Initiators</b>	Citizens formed highest proportion of groups	Federal agencies formed highest proportion of groups*#
<b>Stakeholder Groups Represented</b>	Citizens ranked highest Federal agencies ranked fourth  Summary of select groups represented <sup>a</sup> :  1) Citizens (77%) 2) State agencies (75%) 3) Local agencies (73%) 4) Federal agencies (58%)	Federal agencies ranked highest* Citizens ranked eighth*  Summary of select groups represented <sup>a</sup> :*  1) Federal agencies (88%) 2) State agencies (86%) 3) Local agencies (49%) 4) Citizens (27%)
<b>Education</b>	Goal: Ranked highest (44%) Strategy: Ranked highest (86%) Outcome: Ranked second (27%)	Goal: Ranked last* (8%) Strategy: Ranked fifth* (42%) Outcome: Ranked last* (19%)
<b>Management Plan</b>	Outcome: Ranked fifth (13%)	Outcome: Ranked second (61%)

\* denotes results from Yaffee et al. 1996; # denotes results from Duram and Brown et al. 1999

a: Not all stakeholder groups are included in this table

b: Yaffee et al. included an additional category of “private landowner” that was represented in 50% of projects they studied. It is not clear how this may relate to the category of “citizen.”

**Table 1.** Ohio Watershed Groups Compared to Partnerships Nationwide

Overall, results from this study suggest that there are some important differences between Ohio watershed groups and partnerships nationwide (see Table 1). Ohio groups appear to have greater participation from private citizens, a heightened role of the private citizen (as demonstrated by group formation), and a decreased role of federal agencies. In addition, results suggest that Ohio groups place more emphasis on education and less emphasis on watershed planning. It is important to note that, due to different sampling techniques, methods, and study purposes, the meaning of each comparison should only be interpreted as relative rankings for each category. Further studies are needed to investigate these qualitative comparisons and verify or disprove these trends. Nevertheless, these differences are intriguing and warrant further investigation.



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## Differences within Ohio: Comparing watershed groups in Ohio

In addition to regional variation among groups across the U.S., results suggest that there is a wide range of groups in Ohio. Analysis across groups and group types helps to shed light on this complex topic. It also suggests some implications for the role of groups in policy-making, management and planning, and program implementation. These differences are discussed below, as well as some practical implications.

The level of stakeholder involvement varies considerably across groups. Some watershed groups have only one type of stakeholder represented while others have more than nine participating. It is not clear what this means in practice. While stakeholder involvement is considered an important aspect of watershed management, there is little understanding of how level of stakeholder involvement relates to other aspects of groups, such as strategies, outcomes, or barriers. Several studies suggest that collaboration among many stakeholders was instrumental in groups' success (see Yaffee et al. 1996; Wondolleck and Yaffee 2000). However, others suggest that the level and type of stakeholder involvement that is needed may depend on the issues and the context, or the stage of the project (see Chase et al. 2000; Steelman 1999). In short, there is still uncertainty over when and how stakeholders should participate in watershed planning and management.

Another closely related characteristic is group type. Recall that, in this study, group type is based on stakeholder membership. Some groups are citizen-based, composed only or primarily of private citizens. Others are agency-based, composed only or primarily of agency representatives. And others represent a mix of both public and private representatives. It is easy to see how these different structures could influence how a watershed group functions. The role of this group type is explored in depth in another paper (see Moore and Koontz forthcoming). In short, there are notable differences that exist across these group types related to stakeholder representation funding, strategies, barriers and outcomes.

In general, citizen-based groups have less diverse stakeholder involvement, have less funding, are more likely to use interest group strategies such as letter writing campaigns, perceive more significant barriers, and are more likely to cite outcomes related to lobbying and influencing policy. Agency-based and mixed groups closely resemble each other, sharing similar budget resources, strategies, barriers, and outcomes. The key differences among these two types is that mixed groups more frequently use stakeholder involvement and more frequently reported the development of a management plan and increased public awareness as outcomes. Understanding the types of group that exist can help inform practitioners seeking to involve these groups in resource planning and management.



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In addition to stakeholder involvement and group type, groups differed tremendously with respect to size of focus area. The smallest focus area was less than one square mile; the largest was 6500 square miles. How a group operates at these different scales may differ significantly. Groups focusing on larger spatial areas may face more complex and diverse issues compared to those groups focusing on smaller areas. Also, the logistical challenges of fostering meaningful interaction among stakeholders living far apart has been described in other studies (see Thomas 1999).

Groups also vary significantly in their funding. Many groups (36%) report having no annual budget, while others (22%) report annual budgets in excess of \$75,000. Those groups that lacked funding, however, did not necessarily consider this a barrier. Many of the activities they pursued did not require much (if any) funding, such as canoe floats or stream clean-ups.

## Conclusion

This study highlights the diversity of watershed groups in Ohio. This high level of variation is consistent with collaborative watershed management's "flexible and adaptive" approach. Each project is unique to each area, forming in response to local issues and contexts. These differences can be considered assets, as each project creates a unique set of strategies and styles that others can draw from. However, in order to build from past experiences, better understanding is needed of how this variation relates to other aspects of groups, such as goals, strategies, barriers, and outcomes. In addition, such understanding can help contribute to more general knowledge about partnerships and their role in resource planning and management.

These results also offer an interesting perspective of watershed groups in the Eastern U.S., a region currently lacking analysis. Results suggest that Ohio groups differ from partnerships in other parts of the U.S. with respect to their high level of citizen involvement, strong emphasis on education, and decreased level of federal agency participation.

It is important to note that these studies represent a snapshot of partnerships in time. These partnerships are dynamic, subject to change in a short period time. This survey was compiled in January of 2000. More research is needed to follow up with the results from this study. Many changes have occurred in Ohio since this study was conducted. As mentioned previously, the State of Ohio is currently funding watershed coordinators in Ohio and supporting these groups to develop watershed management plans. In addition, many groups have just recently formed and may have changed considerably since this survey was conducted. Thus, better understanding of watershed group activities and achievements is needed to achieve the potential benefits of collaborative and community based resource management in Ohio and across the United States.

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<sup>1</sup>Comparison of watershed groups in Ohio with other partnerships across the United States is challenging, as each study used different methods for sampling and data collection. Nevertheless, comparison of relative rankings of factors such as goals or outcomes across different studies can be informative.



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

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

### The ECARP has five fundamental objectives:

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





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

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

### **For More Information**

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

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

