

VOLUNTARY ASSOCIATIONS AND THEIR INVOLVEMENT IN
COLLABORATIVE FOREST MANAGEMENT

A Dissertation

by

JIAYING LU

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

December 2010

Major Subject: Recreation, Park and Tourism Sciences

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ABSTRACT

Voluntary Associations and Their Involvement in Collaborative Forest Management.

(December 2010)

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Chair of Advisory Committee: Dr. Michael A. Schuett

Voluntary associations representing numerous types of recreation users and environmental issues have flourished across the landscape in America. However, the literature has not sufficiently studied these associations and their role in collaborative natural resource management. A lack of understanding of voluntary associations has not only limited managers' ability to accommodate changing values of the American public, but also resulted in tremendous costs for land management agencies.

This dissertation was aimed at gaining a better understanding of outdoor recreation and environmental voluntary associations and their involvement in collaborative forest management. Five objectives guided this study: (1) assessing the organizational characteristics of voluntary associations; (2) exploring organizational concerns about forest management issues; (3) examining organizational leaders' experiences in collaborating with the Forest Service; (4) evaluating the perceived effectiveness of collaboration efforts with the Forest Service, and (5) developing and testing a social psychological model to predict members' participation in organizational activities.

To achieve our research goals, a case-study approach utilizing a mixed-methods research framework was employed. The Sam Houston National Forest (SHNF) located in New Waverly, Texas served as the geographic focus of this research. Semi-structured interviews and a web-based survey were conducted with members in selected voluntary associations that are currently involved in collaborative forest management at SHNF.

The findings identified stakeholder attributes and interests, validated assumptions held regarding voluntary groups and assessed collaboration effectiveness, and helped to uncover alternative explanations for members' differential participation in voluntary associations. The study offers a conceptual bridge linking several areas of study including inter-organizational collaboration, environmental communication, outdoor recreation studies, and volunteerism.

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CHAPTER I

INTRODUCTION

Voluntary associations representing numerous types of outdoor recreation users and environmental issues have flourished across America (Weber, 2000). These organizations, ranging from national interest groups to local community members with a specific concern, have played an influential role in natural resource management (Ryan, Kaplan, & Grese, 2001). Some efforts are a direct response to controversies caused by competing uses for recreation resources, facility development, regulation change, and community growth (Schuett & Ostergren, 2003). Some manifest the social conditions and context in the organizations such as the pervasive mistrust in government agencies (Leach, 2006; Walker, 2004). Some reflect the growing political support for public involvement in natural resource management by devolving financial and technical support to local groups (Nerbonne & Nelson, 2004). Others represent the rise of bottom-up, grassroots politics and are characterized by direct participation, self-organization, and community involvement (Cox, 2006). Together these voluntary associations have contributed to the prosperity of civic environmentalism. This collaborative approach to natural resource policy creates custom designed solutions to complex problems in specific locations across the country (Wondolleck & Yaffee, 2000).

Due to the shift to a more collaborative approach for forest management (Germain, Floyd, & Stehman, 2001), today's forest managers are more likely to work

This dissertation follows the style of *Leisure Sciences*.

together with various stakeholder groups. Voluntary associations are now recognized as an important stakeholder with the Forest Service and other federal land managing agencies. While the Forest Service has historically worked closer with the commodity-oriented groups, such as the timber industry, and many non-commodity groups, such as outdoor recreation and environmental associations tend to be overlooked (Clary, 1986; Halvorsen, 2001).

A lack of understanding about recreation and environmental voluntary associations has not only limited managers' ability to accommodate changing values of the American public toward forest resources, but also resulted in tremendous costs for the agency. For instance, the persistence of litigation and appeals filed by voluntary associations has potentially eroded the legitimacy and trust of the Forest Service in the eyes of citizens and interest groups (Forest Service, 1999). Changes in policy and its application at the individual site level may generate negative responses from the public especially for recreation visitors (Gobster, 2001; McCool & Lime, 1988). Given the importance of voluntary groups in resource decision-making, land managers now recognize that if natural resources are treated separately from the wider social fabric, they are doomed to fail (Stankey, 1989).

Problem Statement

The literature has not sufficiently studied voluntary associations in natural resource arena (Dennis & Zube, 1988; Hendee, Catton, Marlow, & Brockman, 1968; Schuett & Ostergren, 2003). Past research has focused mainly on the characteristics,

motivations, and specific activity participation of individual recreationists (Manning, 1999; Pigram & Jenkins, 2006). Although a few studies have investigated organizational memberships of outdoor recreationists, it has been limited to the type and number of associations in which individuals are involved. Considering the amount of time and effort that individuals spend being involved in voluntary organizations, little effort has been paid in the literature understanding the role and influence of these organizations in natural resource management.

It can be argued that voluntary associations play an important role in connecting recreation and natural resource management (Shelby & Shindler, 1992). Previous literature has shown that a large percentage of active recreationists claimed membership in some outdoor recreation or conservation group (Dennis & Zube, 1988; Hendee et al., 1968). Moreover, the protection and management of natural resources for recreation purposes is a major focus of land management. To this end, there is a need to better understand voluntary associations' involvement in natural resource management. Specifically, three major gaps have been identified and are being addressed through the current research.

First of all, there is little work that provides systematic analysis of voluntary associations as a stakeholder group in natural resource decisions. Little is known about: (1) Why these groups are formed; (2) How these groups are structured; (3) What their interests and concerns are regarding forest management, and (4) How these groups interact with the Forest Service and other stakeholders. Given the sheer magnitude of voluntary associations and their contribution to natural resource management, there is a

need to uncover this fundamental information to better understand the entire public involvement process.

Although there is a growing body of literature on the evaluation of collaborative natural resource management, only a few studies have assessed the perspective from members of voluntary associations. Various types of stakeholders may have strikingly distinct views on the effectiveness of collaboration. Soliciting responses from members of voluntary associations can provide more reliable information to the overall functioning of collaboration. Also, research on voluntary associations tend to tacitly agree on the positive influences they have i.e., enhanced public awareness of resource issues, changed natural resource policy, created social capital without empirically verifying these perceived statements (Klyza, Isham & Savage, 2006). Thus, it is necessary to empirically investigate the role and influence of grassroots groups in collaborative decision-making.

Another area that requires more examination is members' participation in group activities. The importance of committed volunteers to successful collaborative resource management cannot be overstated. Existing theories, i.e., resource mobilization, tend to emphasize the macro process instead of individual participation. Many important factors that influence individuals' decision making are still unexplored. Therefore, given these gaps in the literature, there is a need to develop a theoretical model to examine the antecedents of members' participation in voluntary associations.

Purpose of the Study

In response to these limitations, the purpose of this study is to better understand voluntary associations' involvement in natural resource management. Specifically, there are five overarching research questions:

1. What are the characteristics (e.g., history, missions, purpose, activities, and membership profiles) of selected voluntary associations?
2. What concerns do voluntary associations have with regard to forest management issues?
3. What factors influence the level of voluntary associations' involvement in collaborative forest management?
4. How effective are the current collaboration efforts with the Forest Service, from the perspective of voluntary associations?
5. What factors influence members' participation in voluntary associations?

Significance of the Study

It is hoped that this study expands the understanding of voluntary associations in the planning and management of natural resources. This study offers a conceptual bridge linking several areas of study including natural resource planning, leisure and recreation, environmental communication, and volunteerism. This study employs an empirical case study approach to evaluate the perceived effectiveness of the collaboration from a voluntary association members' perspective. The results can be used to validate assumptions held regarding voluntary groups and accountability of collaboration (e.g., enhanced environmental awareness, changed environmental policy, created social

capitals). This study fills a gap in the stakeholder literature by exploring an overlooked group: outdoor recreation and environmental voluntary associations. Baseline information about these groups can be used to identify stakeholder interests, group differences and relationships. Moreover, this study will contribute to the literature by investigating the antecedents of members' participation in voluntary associations. Prior research in the literature has emphasized common interests and normative responsibilities to predict individuals' collective behaviors. The current study will help to uncover alternative explanations for differential participation and engagement.

At the same time, practical implications drawn from the research would provide useful information and identify mechanisms to help promote voluntary associations' involvement in collaborative resource management. The monitoring of collaborative management is needed to guide resource managers in several areas: to design or modify approaches to involve the public in management decisions; to assist policy makers to formulate regulations and institutionalize public involvement at the grassroots level, and to generate academic knowledge on how collaborative efforts impact our society. The findings can also help voluntary program coordinators to develop strategies to sustain and advance resources for enhanced and meaningful public involvement.

Limitations of the Study

The findings of the study should be interpreted in light of their limitations. First and most importantly, this is a single case study in one national forest in Southern United States and only five voluntary groups were sampled in this study. Therefore, the study results cannot be generalized to the entire nation. Another drawback of the study

is the use of online survey to collect quantitative data. Not all members allow their email addresses to be listed and some may not have internet access and computer skills. This limited the accuracy and the size of sampling population. The online survey was also limited by the self selection bias that individuals who hold either strongly in favor or strongly against collaboration are more likely to participate, thus, confounding the results on either end of the answer spectrum (Wilson, 1999). In addition, several measurement scales used in the online survey have not been used in prior research, which may undermine the validity and reliability of the results.

Definitions of Terms

Voluntary associations: groups of people who join together voluntarily for some common or shared purposes and interact in a spirit of mutuality (Modified based on Salamon and Anheier's (1997) definition of voluntary associations).

Stakeholder: any group or individual who can affect or is affected by the achievement of an organization's objectives (Freeman, 1984, p.46).

Collaboration: a group of autonomous stakeholders of a problem domain engaged in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to the domain (Wood & Gray, 1991, p.146).

Public participation: the ability of citizens and groups to influence environmental decisions through access to information, public comments, and the right of standing (Cox, 2006, p.84).

CHAPTER II

LITERATURE REVIEW

The purpose of this study is to better understand voluntary associations and their involvement in collaborative forest management. This chapter begins with an overview of the organizational attributes and interests of voluntary associations. Moving to an inter-organizational context, the literature on stakeholder collaboration in natural resource management was reviewed. Several theoretical perspectives including inter-organizational behavior, environmental communication, and common-pool resource management are introduced to provide a base to initiate the research in a more informed manner. Then, theoretical foundations on the evaluation of collaboration effectiveness were also discussed. Lastly, focusing on individual level behavior, social psychological theories were discussed and integrated to a model to predict members' participation in organization activities. The overall research framework is shown in Figure 1.

Organizational Attributes of Voluntary Associations

Voluntary associations are actively involved in collaborative efforts through a wide range of programs and policies. These groups have been identified as key stakeholders by major land agencies (Conley & Moote, 2003; Gobster & Westphal, 2004; Needham & Rollins, 2005). However, the literature on voluntary associations as natural resource stakeholders is extremely limited. Existing studies have generally looked at the purpose, structure and composition of voluntary organizations. Other areas such as group

interests and concerns about natural resource management have not received much attention in the literature.

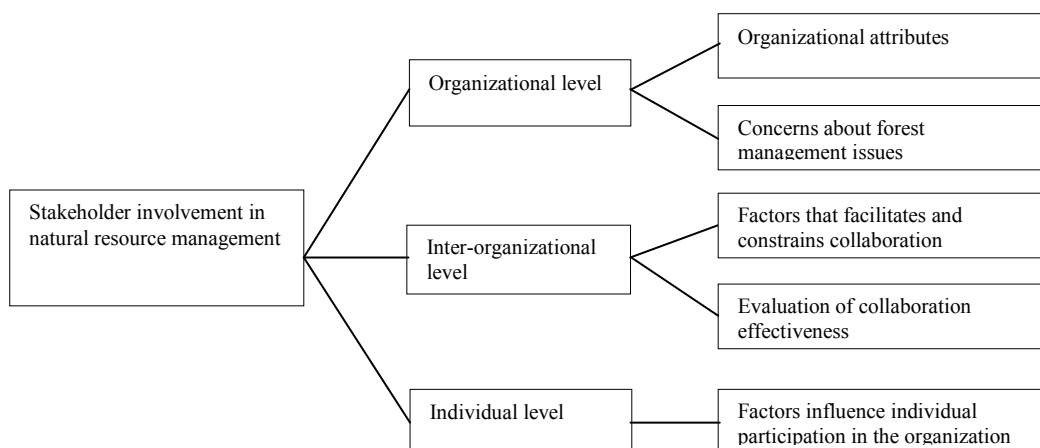


FIGURE 1 Overall research framework.

Purpose of Voluntary Associations

Voluntary associations are often described as “expressive” or “instrumental”, based upon the purpose of the organization (Jacoby & Babchuk, 1963). Expressive groups (e.g., mountain biker associations) focus on providing opportunities and benefits to their members and therefore, confine actions directly related to the primary recreation goals of the organization. Instrumental groups (e.g., National Audubon Society) pursue broader goals and benefits for the general public. Several studies suggested that the expressive and instrumental classification can be used to describe outdoor clubs and conservation groups (Dennis & Zube, 1988; Shelby & Shindler, 1992). Some evidence indicates that some of the expressive groups which were originally dedicated to membership-oriented goals are increasingly becoming instrumental. These findings have

been demonstrated in several ways including partnerships with environmental agencies, the solicitation of statements on environmental issues, and the monitoring of a governmental agency with environmental responsibilities (Faich & Gale, 1971). Further, research shows that the nature of goals can affect stakeholder collaboration. Generally speaking, well-defined group goals, compatible goals, realistic goals, and goals that match individual goals are more likely to lead to successful collaboration (Schindler & Neburka, 1997; Wondolleck & Yaffee, 2000). The previously mentioned characteristics reveal complex ways in which different groups can develop and interpret their purpose and vision.

Membership Profile

Previous research indicated that several socio-demographic variables are correlated with voluntary group membership. Overall, voluntary group members tend to be better educated, have higher income, white, middle age, male, married, and have children (Smith 1994; Wilson & Musick, 1998). Other factors associated with volunteer membership include social networks, length of residence, as well as being politically active (Claibourn & Martin; 2000; Shindler & Neburka, 1997). Research shows that members in outdoor recreation associations tend to recreate frequently and have relatively high skill and knowledge in recreation activities (Schuett & Ostergren, 2003). Studies have shown that voluntary group members have leadership abilities, organizational skills and wide social connections in the local community. Group members are often perceived as credible and helpful in the eyes of local residents. Interpersonal trust is also high among the members of citizen-based groups (Steelman &

Carmin, 2002). Therefore, previous studies have indicated that a direct and positive relationship exists between affiliation in voluntary association and social class.

Voluntary Associations' Interests in Natural Resource Management

The views and behaviors of members in voluntary associations are important to decision makers as involved citizens are most likely to have an influence on land management policies. A growing body of research has identified attitude differences between and within voluntary groups on general environmental attitudes as well as specific management issues. Compared to other stakeholders, voluntary groups are more concerned about the environment and are highly supportive of pro-environmental behaviors. For instance, Cordano, Frieze, and Ellis (2004) compared three stakeholder groups i.e., business managers, government environmental regulators, and active members of pro-environmental voluntary groups on their attitudes toward property rights, environmental regulation, technology and intention of pro-environmental behavior. Of all three groups, the voluntary groups were most supportive in taking environmental action. Suman, Shrivani, and Milon (1999) surveyed three stakeholder groups in the Florida Keys, i.e., commercial fishers, dive operators, and members of local environmental groups. Members of environmental groups were the strongest supporters of the harvest refugia at the Florida Keys National Marine Sanctuary, while their level of participation in the designation process was moderate.

Voluntary associations have been shown to have different norms regarding specific management issues such as recreation impact, fire policies, and tourism development. Needham and Rollins (2005) suggested that organized recreationists tend

to have higher normative standards about the acceptable impacts than individual recreationists and company representatives. Gardner, Cortner, Widaman, and Stenberg (1985) conducted a national survey of forest users on fire management policies with members of the Soil Conservation Society of America, the Federation of Fly Fishermen, and Audubon Society. Contrary to managers' expectations, organized forest users were strongly supportive of fire suppression policies. Another study compared residents who are involved in community organizations with those who are not involved on their attitudes toward tourism development (Jurowski & Brown, 2001). The results also indicated that support for cultural tourism infrastructure development increased as the level of involvement increased.

Schuett and Ostergren (2003) examined environmental attitudes held by two national recreation associations. They reported that members of a mountain biking association appeared to be more environmentally active and identified more with environmental issues than the members in an off-highway vehicle association. Dyck, Schneider, Thompson, and Virden (2003) looked at mountaineering club members' attitudes toward the environment and toward low-impact camping practices. They found more differences on specific concerns (low-impact practices) than general environmental attitudes by participants' level of specialization.

Overall, given the significant positive relationships between group membership and environmental activism, the importance of voluntary associations in natural resource conservation can't be ignored. Further, it can be stated that voluntary group members' level of environmental activism is influenced by a number of variables such as group

type, specialization, involvement, and specificity of concerns. This observation renders a plea for an understanding of a broad set of group variables in the analysis of voluntary groups as stakeholders.

Stakeholder Involvement in Natural Resource Management

Background

Stakeholder involvement in natural resource management is better understood as a challenge to the traditional management model in government agencies. Until the middle of the twentieth century, natural resource planning in United States was dominated by the “rational” model which emphasizes top-down governance. For a long time, federal agencies such as the Army Corps of Engineers, Bureau of Land Management, and the U.S. Forest Service have had a great deal of power and influence in local land management decision-making. By the late 1960s, the top-town governance of natural resources had been widely contested for its ignorance of plurality of interests in society, the pervasiveness of conflict between managers and stakeholders, and the lack of trust in government to manage resources effectively (Yosie & Herbst, 1998).

Public involvement in environmental policies is driven by increased awareness of environmental issues, growing demand for improved environmental quality, and intensified competition of the use of scarce resources. Supporters of public participation argue that the public can best judge and represent its own interests. The public is capable of managing such resources through collective action, by communication, and establishment of agreed-upon rules. Public participation can create public policies that

truly reflect the values, needs and concerns of society. Through participation, power can be redistributed from government to citizen (Arnstein, 1969), which is considered critical for democracy and legitimacy of government (Godschalk, Brody, & Burby, 2003; Fiorino, 1990; Steelman & Ascher, 1997).

The growing interest of public involvement in environmental issues has led to a wave of environmental legislation enacted to mandate stakeholder identification and involvement in natural resource planning in United States. Signed in 1970, the National Environmental Policy Act (NEPA) is the most influential and far-reaching law that requires federal agencies to integrate environmental values into their decision making processes by providing environmental impact statements (EIS) available for public comment. NEPA, as well as other significant pieces of legislation mandating public involvement has taken an important step in challenging the top-down, unilateral agency decision-making.

In order to understand the complexities of public participation, the literature offers several typologies of this process. Arnstein (1969) proposed a ladder of citizen participation, which is a commitment of increasing involvement, from non-participation (which is labeled “manipulation”) to consultation (which is labeled “tokenism”) to citizen control. Mannigel (2008) developed a continuum on the level of participation, stressing that participation as an end rather than a means is more preferred for the empowerment and equity of local stakeholders. Biggs (1993) described the level of engagement as a relationship that falls into four levels: contractual, consultative, collaborative, and collegiate. Although much of the literature assumes that a higher level

is preferred, different levels of engagement are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes.

The traditional public involvement strategy used by the Forest Service can be seen at the consultation level in Arnstein's ladder. The role of the public in this approach is just reacting to a decision rather than influencing the decision (Cortner & Moote, 1994). This top-down participation process has led to frustration, dissatisfaction, and conflict of people who are interested in natural resource management (Germain et al., 2001). Government officials, forest managers and scientists have come to agree that a more collaborative approach is needed to improve the public involvement in forest management (Johnson et al., 1999). Collaborative natural resource management requires planners to: involve a wide range of stakeholder groups; engage stakeholders in an intensive and creative process of consensus building, emphasize decentralized decision making, and use collaboration as a means rather than an end to build understanding and capacity (Wondolleck & Yaffee, 2000). As collaborative practices become increasingly widespread, scholarly research has also grown to build the theoretical foundation of these efforts.

Theoretical Development

Collaborative natural resource management has been investigated from a number of disciplines. This section will provide an overview of organization theory, communication theory, and common pool resource theory (Figure 1). These theories

were selected for their relevance to the complexity of and meanings associated with collaboration practices.

Inter-organizational collaboration theory. The inter-organizational collaboration theory is based on the premise that the organizational environment is a turbulent one, where conflict over organizational development exists. Collaboration as a coping mechanism is needed to reduce turbulence and increase the likelihood of organizational sustainability (Astley, 1984). According to this theory, collaboration is defined as, “a group of autonomous stakeholders of a problem domain engaged in an interactive process, using shared rules, norms, and structures, to act or decide on issues related to the domain” (Wood & Gray, 1991:146). A few points are critical to the definition: 1) stakeholders are the groups or organizations with an interest in the problem domain; 2) the problem domain refers complex problems that require inter or multi organizational response; 3) the scale of the domain may vary considerably from local issues to a national policy; 4) though decisions are made jointly on a consensus basis, stakeholders are autonomous since they retain their independent decision-making powers; 5) the term “interactive process” indicates a change-oriented relationship of some duration exists and that all participating stakeholders are involved in the process; 6) “shared rules, norms and structures” tend to be implicit in collaboration, however, stakeholders must explicitly agree on the rules and norms that will govern their interactive process, and 7) in this general definition, outcome of collaboration is left unspecified and open to empirical investigation.

Following this line of theory development, Gray (1989) outlined three general steps for the collaboration process. The first stage focuses on problem setting (identifying problem domains and stakeholders), and followed by the second stage, direction setting (identifying common ground and sharing future collaborative interpretations). The third stage is implementation, which focuses on institutionalizing the shared meanings that emerge as the domain develops. Additionally, scholars have advocated the importance of involving all the relevant and legitimate key stakeholders at an early stage during collaboration. A legitimate stakeholder is one who has the right to participate in the process and who is capable of representing their interests (Gray, 1985).

This organizational framework has been used to investigate collaborative efforts in natural resource planning and other areas. Jamal and Getz (1995) applied Gray's collaboration theory to a community-based tourism development context. Challenges and considerations in the planning of local tourist destinations were proposed, including the perception of interdependence, recognition of mutual benefits, perception of power, involvement of key stakeholder groups, joint formulation of goals, and the role of a convener. In another example, Imperial (2005) utilized organization theory to examine how collaboration was used to enhance the governance of networks in watershed partnerships. He presented a conceptual framework that illustrated how collaboration occurs at the operational, policy-making, and institutional levels.

In sum, an inter-organizational collaboration framework recognizes that resource management situations are turbulent. Rapidly changing ecological and social conditions

contribute to their uncertainty, conflict and overall complexity. Yet, the issue of equity is somewhat neglected in the framework as stakeholders can only be involved when they have the capacity to participate. In other words, participants may be excluded from collaboration if they lack the resources required. An inter-organizational collaboration framework has been critiqued for its overemphasis on technique, resulting in the prioritization of efficiency over empowerment (Clever, 1999). Deeper social, political and economic realities that differentially impact people's ability to participate need to be considered before applying this framework to the field.

Communication theory. Collaborative natural resource management has also been conceptualized by theories of environmental communication, which explore the ways in which communication, as a symbolic action shared among people and organizations, impacts both our understanding of and our relation to the natural world (Cox, 2006; Peterson, Peterson & Peterson, 2007). The basis of communicative rationality comes from the work of Habermas (1984). He proposed that 'everyday life', rather than being based on the structure of the knowing subject, is instead based on interpersonal communication. He contends that systemic constraints such as power inequalities and institutional practices can inhibit any collaborative arrangement. His popular notion of a public sphere (1974) placed much emphasis on respectful communication ("speaking and listen") among relevant stakeholders. He maintains that forms of dialogue, collective learning, and consensus-building are required based on mutual understanding of stakeholders. Built on the environmental communication theory, public participation refers to, "the ability of citizens and groups to influence

environmental decisions through access to information, public comments, and the right of standing” (Cox, 2006, p. 84).

It has been recognized that communication serves two major functions in relation to public participation in environmental decision making. It is generally agreed that environmental communication has pragmatic functions. It educates, persuades, and advocates human beings to make daily decisions about the physical world around them. Scholars have analyzed how government agencies, business organizations, voluntary groups, and individuals use communication as an instrumental vehicle to define problems, set agendas, and persuade solutions in decisions. Environmental communication also serves as a constitutive function. The environment is not only a material object but also constructed and organized subjectively through discourse. Communication helps to constitute symbolic representations of nature as subjects for our understanding. Overall, the pragmatic and constitutive functions of communication provide a theoretical foundation for a more thorough examination of the context, process, and outcomes of collaboration.

The literature offers a number of collaboration frameworks that are built on communication theories. For example, Graham (2004) presented a collaboration framework based on values of openness, shared responsibility, and interpersonal relationships. As people engage in dialogue with one another, they are collaboratively engaged in a process of, “creating, or constituting meanings, interpersonal relationships, individual and collective identities, and social worlds” (Graham, 2004:41). Similarly, Daniels and Walker (2001) proposed the Collaborative Learning (CL) framework for

public participation theory and practice. CL encourages people to think systemically and to learn actively with one another about a particular situation. The process of CL often involves establishing common understandings regarding the specific situation, identifying possible changes or improvements for that particular issue, and debating these improvements on whether or not they represent desirable and feasible changes in the present situation.

Overall, a communicative approach recognizes the distribution of power between individual stakeholders. However, it could be argued as being overly optimistic, when suggesting that, “new relations of collaboration and trust will shift power bases” (Healey, 1997, p. 265). It has also been noted that not all communication is positive.

Collaborative learning can impede planning processes when interactions produce or confirm negative perceptions of other stakeholders (Schusler, Decker, & Pfeffer, 2003). Communicative approaches have also been criticized as focusing too much on process rather than context and outcome (Jones & Allmendinger, 1998).

Common-pool resource theory. Different from organizational and communication theories, the common-pool resource (CPR) theory focuses on the nature of the resource. Common-pool resources, also called common property resources, are a type of natural or human-constructed resource for which exclusion of users is difficult to achieve and for which joint use reduces the availability of benefits derived from the resource for others (Ostrom, 1991). Examples of common-pool resources include irrigation systems, forests, water, and the atmosphere. CPRs can be managed under four basic types of regimes: (1) Public property, when owned by governments; (2) Private

property, when owned by private individuals or corporations; (3) Common property, when owned by communal groups, and (4) Open access, when no one owns it.

Researchers have debated over sustainable solutions to manage CPRs. According to Hardin (1968), rational individuals acting independently and solely on their short-term interest will eventually overexploit limited common-pool resources. Therefore, the only solutions to avoid a tragedy of the commons are to manage them as private property or public property. Recently, however, a shift has taken place toward the potential of managing CPRs in the common property regime. This shift has been driven by field observations that community-based management is capable of creating collective governance rules and increasing the long term sustainability of CPRs (Bromley & Feeny, 1992; Ostrom, 1991). In a common property regime, mechanisms are in place to allow monitored access to the resource system for community members and exclude outsiders from using its resource. Thus, CPRs are viewed as a private good to an outsider and as a common good to an insider of the community. Community-based systems tend to have two advantages over top-down approaches: better knowledge of the resource and more efficient monitoring for rules compliance (Ostrom, 1991).

In community-based management, some form of organized collective action linking individuals and the community such as voluntary association is essential to manage access to the CPRs and the allocation of the benefits it produces. Voluntary associations are often brought together by shared desire to influence the protection and use of natural resources, to represent a broad array of interests (some of which may conflict), and to make decisions from which they and their community can benefit.

Community-based management can be seen both as a process of developing and enhancing the ability of members to act collectively for improvement in a community, “...in any or all realms: physical, environmental, cultural, social, political, economic, etc.” (Phillips & Pittman, 2008, p.6).

Overall, the common property management of natural resources challenges the traditional ‘either public or private’ dichotomy. CPR theory tends to focus on internal factors of collective action not considering the external environment (Steins & Edwards, 1999). CPR theory draws heavily on the extractive use of natural resources, thereby leaving out other uses of these resources. The changing values of individuals toward natural resources, the multiple-use of natural resources, and technology advancement may require expansion of the theory to account for increased complexity in natural resource management.

In sum, stakeholder involvement is marked as an interdisciplinary field where planning, business, politics, communication, socio-psychology scholars have long contributed to the understanding of this phenomenon. It is clear that these lines of research are not exclusive, but mutually compatible and complimentary to each other. Thus, it seems increasingly important to integrate the seemingly segregated literature to provide a more holistic picture of stakeholder involvement.

Evaluating the Effectiveness of Collaboration

As collaborative natural resource management gains popularity, participants, policy makers, and researchers have sought to evaluate the effectiveness of this approach to managing natural resources. Evaluation can provide feedback on existing

collaborative methods in several areas, for example, assisting policy makers to formulate regulations at a grassroots level, documenting indicators of success, addressing concerns expressed by the critics, and generating academic knowledge on how collaborative efforts impact our society. Although there appears to be no universal agreement on what collaborative effectiveness means and how to evaluate this concept, the majority of researchers agree that effectiveness is multi-dimensional and requires multiple measuring criteria. They also feel that evaluation is normative as effectiveness means different things to different people. In examining effectiveness, the purpose of the evaluation and criteria used must be clear to the evaluators in order to compare with other studies. Evaluation of effectiveness should not be limited to the final outcome, but should take the entire process under consideration.

The evaluation of collaborative efforts has been approached from many points of view, and there is disagreement concerning the most appropriate form of analysis. A number of evaluation criteria have been proposed, and each has made a contribution to the understanding of collaboration evaluation (Innes, 1999; Leach 2002; Selin et al., 2000). In general, previous research on evaluation can be seen as based on five theoretical approaches: goal attainment, social exchange, social learning, social capital, and power dynamics. Each theory emphasizes a different aspect of the evaluative outcome or the various processes in the collaborative effort.

Goal achievement. Goal theory is one of the most popular theories in organizational psychology (Price, 1971). There are many advantages of management by objective: goals allow the organization to focus their attention and invest resources on

goal-relevant activities; goals serve as motivations for participants to put in efforts to work together, and goals evoke cognitive knowledge and strategies for members to cope with the situation at hand (Locke & Latham, 2002). In collaborative partnerships, participants may identify a set of specific, measurable and time targeted objectives (i.e., environmental goals, social goals, long term goals, immediate goals). For evaluation, outcomes are measured and compared to goal statements, problem statements or targets. For example, Beierle (1999) used a set of social goals to evaluate the outcomes of participatory processes. These goals included educating the public, incorporating public values into decision making, increasing quality of decisions, fostering trust in institutions, and making decisions cost effectively.

Evaluation by goal achievement seems rather straightforward, but has its limitations. First, the appropriateness of the goals and objectives themselves are not assessed (Conley & Moote, 2003). Second, not all goals are clearly defined and specific for evaluation. Third, stakeholders have diverse interests and goals for collaboration. This raises the question about whose goals should be used for evaluation. In addition, collaborative planning as an adaptive management strategy implies that the goals might be modified at different stages; therefore, the use of goal evaluation may miss the unanticipated outcomes. Thus, to use the goal attainment approach for evaluation, scholars need to avoid the problem of undefined or ambiguous goals.

Social exchange. In contrast to goal achievement theory, a considerable amount of the literature implicitly or explicitly assumes that collaboration formation is based on reciprocity. The motive of reciprocity emphasizes collaboration and cooperation rather

than domination and control among organizations. The reciprocity model is based on the idea of social exchange, which represents a process of cost-benefit analyses between parties. Each party (individual or group) evaluates every social interaction in terms of what they will have to put into it, and relate this to the benefits they think they may get out of it. The greater the potential benefit, the greater the investment a party may make in a relationship (Kelley & Thibaut, 1969). For, example, in a study examining stakeholder perceptions of the performance of 30 collaborative initiatives from the United States, Carr, Selin and Schuett (1998) compared the perceived benefits and barriers of collaborative planning experiences reported by the Forest Service employees and citizen groups. Agency employees and citizen groups agreed that most beneficial aspects of collaborative planning included relationship building, sharing information and gaining trust for each other. On the other hand, citizen groups felt that collaboration was too time-consuming, slow moving and expensive.

Social exchange theory provides a comprehensive description of how people interact within relationships, as well as how they make decisions outside of partnerships and groups. Therefore, social exchange theory can be applied to evaluate many aspects of collaboration. It is also a “goal-free” evaluation which emphasizes the needs for and effects of collaboration. However, several assumptions underlie this approach. For example, it assumes that resource scarcity may induce cooperation rather than competition (Oliver, 1990). Potential parties expect that the benefit of forming a collaborative relationship far exceeds the disadvantages. Overall, due to its broadness and the assumptions held, the main contribution of social exchange theory is the

documentation and organization of empirical data rather than predicting collaborative behavior.

Social learning. Recognizing that public policy for natural resource management is complex and dynamic; the third approach to understanding collaboration builds on social learning theory. Social learning is, “the process of framing issues, analyzing alternatives, and debating choices in the context of inclusive public deliberation” (Webler, Kastenholz, & Renn, 1995, p.445). According to Daniels and Walker (1996), social learning can be viewed as a form of social change, particularly when changes in how individuals see their private interests are linked with the shared interests of others. Viewing public policy making as a learning process, Firoino (1990) identified three aspects of learning capacity for U.S. environmental policy since 1970: technical learning, conceptual learning, and social learning. Daniels and Walker (2001) proposed the theoretical and conceptual framework of collaborative learning and presented projects which they have applied into this framework. Employing learning as the criteria in evaluating Oregon Dunes National Recreation Area project, the results showed that participants’ understanding of the situation is broadened, concerns were expressed, meaningful improvements were developed and implemented, strategic behaviors persisted, and relationships improved.

Criticism of using social learning as an evaluation criteria points out that learning is necessary but not sufficient to ensure the effectiveness of collaboration. Appropriate structures, resources, and supportive policies are needed to sustain learning and enable joint action. Some scholars have pointed out that learning may also have negative effects.

It may increase conflicts when interactions generate or confirm negative attitudes towards other stakeholders (Schusler et al., 2003). However, a social learning approach may provide the public with a new, more optimistic view of an old policy landscape.

Social capital. In the last few decades, the concept of social capital has gained prominence in the social sciences and interdisciplinary studies. Putnam (1993, p.167) defines it as, “features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions”. As "social capital" decreases, the ability to resolve environmental issues is seriously circumscribed. Social interactions among a set of individuals in their communities are observed to generate trust and norms that affect environmental decisions (Peterson et al., 2006). Thus social capital created through collaboration can be used as a mechanism for evaluation.

Klyza et al. (2006) examined social capital created by Vermont’s environmental groups. They identified specific forms of bonding, bridging, and linked social capital to these groups. Lauber, Decker, and Knuth (2008) qualified the functions and key structural properties of social networks of stakeholders in three successful cases of collaborative natural resource conservation and development. Rohe (2004) developed a social capital model to evaluate community development. The model suggests that civic engagement creates new relationships, which leads to greater trust, and trust leads to more effective collective action for individuals and society. These studies have examined social capital through activities, social networks and relationships, as well as individuals’ perception of trust.

Social capital theory has a strong conceptual appeal. However, one of the greatest weaknesses is the controversy over the measurement of social capital. Due to the abstract nature and varying definitions of social capital, it is often measured inconsistently between studies (Liu & Besser, 2003). For example, some authors equate trust with social capital (Fukuyama, 1995). Some see trust as a source of social capital (Putnam et al., 1993), while others see it as a resulting asset from social capital (Lin, 2001). In addition, research has shown that social capital can work against collaborative efforts when used as a tool for excluding all but the local majority view (Peterson et al., 2006). Therefore, when choosing indicators to measure social capital, researchers should be consistent with its conceptual development and be aware of its limitations.

Empowerment. Power is central to engage stakeholders in collaborative processes. Collaboration essentially involves a shift from minority elite decision making to more participative and equally shared decision making (Pateman, 1970). It is also one of the major reasons why people may decide to get involved in collaborative natural resource management. The nature and the levels of participation are often measured in terms of power and roles that different stakeholders have in the decision-making process. Many scholars have developed typologies based on the perceived power or control the participants have over decision making processes. Examples include Arnstein's (1969) ladder of participation (from manipulation to collaboration) and Cornwall and Jewkes's (1995) scale of participation (from cooptation to collective action). Purdy and Gray (1994) identified three power dimensions and used them as criteria to distinguish collaboration from cooperation in resolving environmental conflict and negotiation. In

empowerment situations, program participants attempt to gain control, obtain needed resources, and critically understand one's social environment (Zimmerman, 1995). Empowerment evaluation is especially considered critical in resolving environmental conflict and negotiation within indigenous communities (Kellert, Mehta, Ebbin, & Lichtenfeld, 2000).

Assessing power relations in collaborative efforts has its drawbacks. Powerful parties can have subtle control of how problems are framed, avoiding certain issues, limiting access of certain stakeholders, as well as setting rules favorable to themselves. Also, researchers themselves may tacitly hold sympathetic perceptions toward groups with less power. The challenge is to develop a balanced conceptualization that accounts for the interrelationships and complexity of the concept.

In the above section, previous research on evaluating collaborative endeavors has been categorized into five groups and critically reviewed. Developing an evaluation framework is important because agencies need to know how well they are achieving their goals, what they are getting from investing in public participation efforts and how to improve their programs. Each theoretical approach focused on a different conceptual orientation toward collaboration and provided guidance to develop appropriate indicators or measures of collaboration. The selection of which evaluation approach to use will depend on the type of collaboration, the nature of the problem domain, and the characteristics of stakeholders in the assessment. Although there might be overlap between approaches, it is argued that no single approach to assessment is sufficient, and combining multiple theories is recommended for a comprehensive assessment.

Individual Participation in Voluntary Associations

Our understanding of the dynamics of collaborative natural resource planning, especially the social-psychological elements involved in the formation of participation, has lagged behind the rise and spread of the actions themselves. In the 1970s, resource mobilization theory emerged to consider structural processes as central and enduring phenomena in accounting for participation in collective action (Anheier & Kendall, 2002). Situated in the instrumental and utilitarian tradition, resource mobilization theory argues that the availability and control of resources are the most important incentives for people to join groups in social movements (McCarthy & Zald, 1977). This theory stresses the ability of organizations to acquire resources (e.g., money, labor, and leadership) to mobilize people toward their goals.

For more than a decade, critics have pointed to the absence of social psychology in the resource mobilization paradigm, which resulted in treating all persons participating in collective actions as equivalent to each other (Weller & Qarantelli, 1973). The resource mobilization theory is limited to explain variations in persons' willingness to participate. For example, why do some people actively participate and others are only nominal members? Why do some people stay in and others drop out of organization? Therefore, alternative frameworks are needed to better understand mechanism of individuals' participation in group activities. In this present study, social psychological theories of membership motivation, group involvement are proposed as important antecedents of members' participation in group activities.

Membership Motivation

In its most elementary sense, motivation is an internal state or condition that energizes action and gives it direction and intensity (Kleinginna & Kleinginna, 1981). In studying antecedents of participation in voluntary activities, motivation for joining voluntary associations would be indispensable to consider as public involvement in natural resource management is channeled through organized groups. Members' behaviors reflect their motivations as they strive to satisfy their needs or goals by participating in activities that are of interest to them.

Motivation theories of group affiliation can be divided into three categories: needs, reasons, and benefits. The first category of theories assumes that human behavior is a result of internal needs. For instance, Maslow's hierarchy of needs (1954) proposed that individuals have five categories of needs that are arranged hierarchically: (a) physiological needs (e.g., shelter, water, and food); (b) safety needs (e.g., security, protection); (c) social needs (e.g., affiliation, love); (d) self-esteem needs (e.g., being respected by others), and (e) self-actualization needs (e.g., achievement). Once a lower level need is met, the individual begins to seek opportunities that provide satisfaction for higher level needs. In studying group dynamics, another example is the *FIRO* (Fundamental Interpersonal Relations Orientation) introduced by William Schutz (1958). Building on earlier work on human needs, Schutz theorized that humans are motivated to join groups for three interpersonal needs: inclusion (interaction or belongingness), control (power or influence), and affection (closeness or love). These various theories showed that motivation for group affiliation maybe rooted in basic human needs.

The second category of theories indicates that conscious reasons are important motivators for individuals to become involved in groups (Fishbein & Ajzen, 1975). For instance, the theory of reasoned action suggests that attitudes toward the expected outcome of a behavior and subjective norms are the major predictors of behavioral intention. This theory assumes that human behavior can be deliberative and planned. A number of studies have employed the theory of reasoned action to examine voluntary actions. For example, Okun and Sloane (2002) provided evidence that attitude, subjective norm and perceived behavioral control predicted intent and intent, in turn, predicted volunteer enrollment in a campus-based program. Cacioppo and Gardner (1993) also employed the theory of reasoned action to the understanding of medical donors' attitudes, intentions, and behaviors. Boz and Palza (2007) found that altruism, selflessness, and the pursuit of social welfare were the major reasons for being involved in this type of activity.

The third category of theories is the benefit-based approach to explain peoples' participation in voluntary activities. One of the most prominent theories is social exchange. The fundamental premise of social exchange theory is that social behavior can be treated as an exchange process of rewards or resources between actors. Rewards and resources refer to the benefits exchanged in social relationships. Rewards are defined as the pleasures, satisfactions, and gratifications a person enjoys from exchange (Kelley & Thibaut, 1969). Resources are material or symbolic commodities for exchange. The costs can involve the energy, time, and money invested for the transaction. Exchange transactions permeate all social phenomena including group processes, which are,

“conceived as sets of voluntary individual actions induced by rewards” (Blau, 1964, p. 91).

The key to the social exchange approach is to investigate the reciprocal relationship that individuals draw from their exchange transactions with their groups. For example, volunteering behavior is a function of perceived costs (e.g., time, money, and energy) and the rewards expected to obtain from volunteering (e.g., satisfaction, knowledge, and social interaction). Individuals who believe their goals can be fulfilled through group membership are more likely to join in groups. Group membership often provides people with a greater opportunity to receive benefits than they would have if they were alone. For instance, people often join labor unions to get higher wages and better working conditions by negotiating collectively with their employer.

In sum, despite the fact that people intend to join voluntary associations for altruistic reasons, empirical studies showed that people have other self-satisfying motivations for volunteering as well. Studies have shown that members can also gain new skills and competence, make new friends, derive some pleasure, and reaffirm values and self-esteem (Mellor et al., 2009). Therefore, a combination of altruism and self-interest are considered to be some of the main motives for joining voluntary associations. From this, scholars developed several scales to measure motivation for membership. In this vein, Clary et al. (1998) developed a six dimensional model of general volunteer motives: (1) to express important values; (2) to better understand the world and its people; (3) for positive self-enhancement; (4) for protective effects against guilt, self-doubt and other negative feelings; (5) to fit into one’s social reference groups, and (6) to

obtain career skills and opportunities. More focused on voluntary association membership of outdoor recreationists, Dennis and Zube (1988) confirmed the differentiation of the instrumental and expressive dimensions proposed by previous researchers. In 1994, Caldwell extended the instrumental-expressive perspective by categorizing membership motives into material (e.g., wages, salaries, property value, information), solidary (e.g., friendship, group identification), and purposive incentives (e.g., civic action, environmental concern). In another study, Ryan et al. (2001) found five themes of motives for continued participation in environmental stewardship programs: (1) helping the environment; (2) learning; (3) project organization; (4) social, and (5) reflection.

Although Clary's volunteer motives has been widely used in non-profit organizations, little research has tested its validity for the context of recreation and environmental voluntary associations. On the other hand, the existing literature on motivation for joining recreation and environmental groups has been very general and lack of theoretical depth. Therefore, more research is needed to improve our understanding of the multiple dimensions of motivation of joining recreation and environmental associations.

Enduring Involvement

Originally developed in consumer behavior research, enduring involvement is a latent social psychological construct which describes the cognitive linkage between the self and the object or a class of objects. In consumer behavior context, enduring involvement focuses on personal relevance, which reflects the degree to which people

devote themselves to the objects. As its name implies, enduring involvement is aroused by ongoing events remaining stable, and evolving slowly overtime (Havitz & Mannell, 2005). This conceptualization stresses that, “enduring involvement emerges when there is congruence between personal needs, goals and values and the attributes of the objects” (Kyle, Absher, Hammit & Cavin, 2006, p.469). Enduring involvement can take many forms. For example, people can experience enduring involvement toward a specific course of activities or an entity (e.g., brand, organization).

There is also general consensus that enduring involvement is a multidimensional construct. Kapferer and Laurent (1985) measured involvement through their consumer involvement profile (CIP) model with five factors: importance, pleasure, risk importance, risk probability, and sign. The importance factor refers to the extent to which a specific product meets consumers’ goals. Pleasure examines the hedonic value of the product. Risk probability measures the probability of making a mispurchase, whereas the risk consequence examines the importance of negative consequences of a mispurchase. The sign examines the identity congruency between individual and the product. Based on Kapferer and Laurent’s (1985) conceptualization, McIntyre and Pigram (1992) developed a three dimensional model of leisure involvement which contained these factors: (1) attraction, which measures the importance and pleasure of the activity to the recreationist; (2) centrality, which includes items designed to measure the centrality of the activity in one’s lifestyle choices, and (3) self expression, which examines the utility of the activity for identity expression. More recently, Kyle et al. (2007) proposed a modified involvement scale which added a dimension of social bonding and split the

self-expression dimension into two dimensions: identity affirmation and identity expression.

Enduring involvement has been employed in understanding overt behavior and psychological phenomena, such as recreation participation (Schuett, 1993), travel information use (Jamrozy, Backman & Backman, 1996), perceived life satisfaction (Zabriskie & McCormick, 2003), place attachment (Kyle, Graefe, Manning & Bacon, 2004) and loyalty to recreation agency (Iwasaki & Havitz, 2004). There is also evidence that involvement is associated with recreation motivations. It has been described as, “an unobservable state of motivation” (Havitz & Dimanche, 1999, p.246). The distinction between motivation and involvement also implies a temporal process by which ego attitudes are activated that arouse emotion, cognition and, ultimately behavior.

A few studies have shed some light on the relationship between motivation and enduring involvement. Several studies on bird watchers suggested that birders with different level of involvement also vary in their motivations. “Committed birders” are more likely to report achievement and fascination factors as motivations than casual birders (McFarlane, 1996). Iwasaki and Havitz (2004) observed that motivation was a strong predictor of enduring involvement among a sample drawn from Canadian recreation centers. Using a sample of campers drawn from three distinct campsites in a southeastern national forest, Kyle et al. (2006) found that effect of motivation on enduring involvement was positive although the influence of the dimensions varied.

Hypothesized Model

The existing literature suggests that enduring involvement may play an important role in mediating the relationship between motivation for joining groups and participation in group activities. However, there are at least two gaps in the literature. The first gap, as noted above, is the failure to show the predicting effect of motivation on the enduring involvement dimension. The second is the lack of research to consider enduring involvement in non-profit service provider context. Hence, based on the literature discussed above, a model investigating the relationships of motivation, enduring involvement, and participation in voluntary associations is proposed (Figure 2). This investigation is guided by the following hypotheses:

Hypothesis 1: A higher level of membership motivation will contribute to a higher level of enduring involvement and vice versa.

Hypothesis 2: A higher level of enduring involvement will contribute to a higher level of group participation and vice versa.

Hypothesis 3: Enduring involvement will mediate the relationship between membership motivation and group participation.

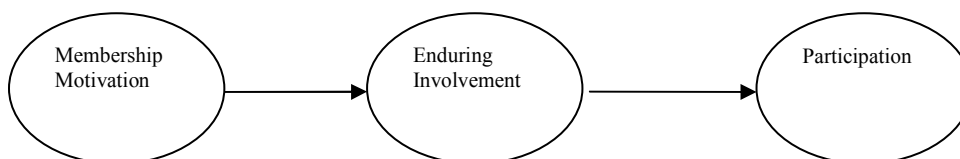


FIGURE 2 Conceptual model of participation in voluntary association.

CHAPTER III

METHOD

This chapter describes the methods used to examine the research questions raised in the previous chapter. The chapter is organized in three sections. Overall research design is presented in the first section. The second section introduces the qualitative method used in the study. Section three outlines the quantitative method.

Research Design

In recent years, researchers have incorporated various methods and techniques to investigate natural resource problems such as content analysis, focus groups, case studies, personal interviews, visual image assessment, web-based surveys, social network analysis, and structural equation modeling (Klyza et al., 2006; Lauber et al., 2008; Kyle, et al, 2006; Needham & Rollins; 2005; Xu & Bengston, 1997). More and more research has demonstrated that the use of mixed methods which contain both qualitative and quantitative methods is likely to generate a more holistic picture of a study topic and provide richer insight on its investigation (Bernard, 2005). Thus, a case-study approach utilizing a mixed-methods research design was employed for this study.

The Sam Houston National Forest (SHNF) located in New Waverly, Texas served as the geographic focus of this research (Figure 3). The SHNF, one of the four National Forests in East Texas, provides an appropriate case for studying public involvement in natural resource decisions. This forest has 163, 037 acres of land which also contains some privately owned parcels of timber and small farms. It offers a variety

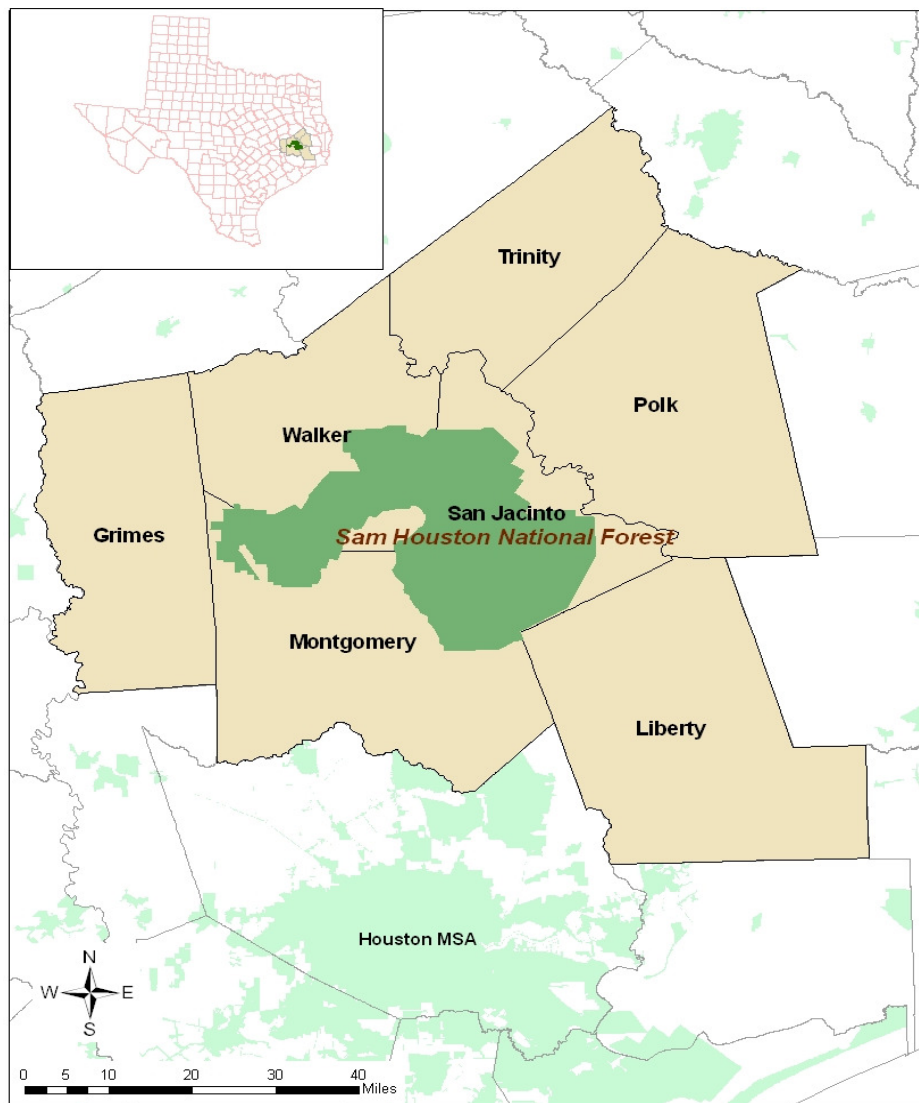


FIGURE 3 Map of the Sam Houston National Forest.

of recreation opportunities such as camping, hiking, bird watching, mountain biking, horseback riding, fishing, boating, hunting, and motorized activities. The SHNF is the only national forest open to off-highway vehicles (OHVs) in Texas. The forest lands provide habitat for endangered species such as the bald eagle and the red-cockaded woodpecker. The SHNF is located 50 miles north of Houston, which is the 4th largest

city in the country with over 4 million people. As a result, urban encroachment has been a potential threat to the forest due to increased use of forest resources. From conversations with the Forest Service staff, five voluntary associations that are currently involved with SHNF planning and management were identified, including the Trail Riders of Houston, the Greater Houston Off-Road Bicycle Association, the Sierra Club of Houston; the Sam Houston Forest Equestrian Association, and the Lone Star Hiking Trail Club.

Qualitative Method

The intent of using qualitative method was to provide rich context for the investigated topics, yield deeper understanding of subjects' true feelings, and derive measurement items for the interested constructs. Three procedures were employed to gather qualitative data:

Document Analysis

The first step was an analysis of documents pertaining to collaborative efforts involved the Forest Service and voluntary associations. These documents included websites of selected voluntary associations and the Forest Service, local and regional newspapers, meeting minutes, grant proposals, emails with the Forest Service, newsletters, census data in the forest region, and research reports. These documents can provide background information concerning organization characteristics, including group history, goals, activities, financial resources, and their interactions with government and other nongovernmental organizations.

Participatory Observation

The second procedure involved participatory observations of group activities. For instance, the researcher participated in the Sierra Club Houston's trail maintenance activities, Lone Star Hiking Trail Club's guided hike, and three of the Sam Houston Trails Coalition's bi-monthly meetings (involving the Forest Service and voluntary associations). Participatory observation can provide the researcher with richer, deeper understandings of the group experience.

Semi-structured Interviews

In the meantime, semi-structured interviews were conducted with key informants to document leaders' perspectives on the engagement of voluntary associations in forest management. Key informants are individuals whose knowledge and experience are valuable for understanding the issues and problems on hand (Bernard, 2005).

Sampling and data collection. A snowball sampling method was applied to recruit key informants in those associations. Contact information for the first few informants was acquired from the Forest Service staff and associations' websites. The first few informants were officers and board members in the associations. They were then asked to identify other informants who are taking on the leadership role in the associations and have interactions with the Forest Service. The sample size of interviews was not determined *a priori*. Rather, the interviews were carried out to a point where the researcher finds that additional interviews do not provide new insights and the answers fall into a pattern with which they are already familiar.

Between March and June 2010, 22 interviews were conducted which averaged 30 minutes in length (Table 1). A number of interviews were conducted in a comfortable environment selected by interviewees. Other interviews were conducted either at the SHNF headquarter after the Sam Houston Trails Coalition meetings or at various group outing venues. Interviews were digitally recorded with the consent of each interviewee. Observations and the content of informal discussions were recorded in field notes. The recorded contents were then transcribed for data analysis.

TABLE 1 Affiliation of Key Informants

Organization	Number of respondents
Trail Riders of Houston	5
Greater Houston Off-Road Bicycle Association	4
Sierra Club Houston Group	5
Sam Houston Forest Equestrian Association	3
Lone Star Hiking Trail Club	5

Measurement. Based on a comprehensive review of literature on voluntary associations and natural resource management, interview questions were developed to cover three major topics (Table 2). The first part focused on baseline organizational information such as founding date, organization missions, size of membership, activities delivered, and organization dynamics. In the second section, informants were asked to

identify forest issues that most concerned their groups. In the third section, informants' experiences in working with the Forest Service were explored. The in-depth interviewing technique was chosen to understand participants' perspectives in their own words. All questions were open-ended, but followed a general script and covered a list of topics (Bernard, 2005). Probing questions were used to gain a greater depth of understanding on the issues.

TABLE 2 Semi-structured Interview Guide

Guiding questions
<p>Part 1: Information about the organization</p> <ol style="list-style-type: none"> 1. How long have you been a member of the organization? What is your role/responsibility? Why did you choose to join this organization? 2. Why was your organization created? In what kind of activities/events does the organization get involved? How many staff are in the organization (full-time, part-time staff, members) 3. Do you think the organization has changed its purpose since it was first formed? What else has changed? Philosophy? Structure? <p>Part 2: Concerns about natural resource and recreation issues on the SHNF</p> <ol style="list-style-type: none"> 4. What do you see as the top three key issues facing the Sam Houston National Forest (SHNF) today? How do these issues tie into your organization's purpose? 5. Have you seen the recreational use of SHNF change overtime? If so, how do you think these changes impact the SHNF? Has the staff at the SHNF responded to these changes? 6. Do you think the natural resources of the SHNF are effectively managed? Why or why not? <p>Part 3: Collaboration experiences with the Forest Service</p>

TABLE 2 Continued

Guiding questions
7. How would you characterize your organization's relationship with the Forest Service?
8. Could you give me an example of a recent/ongoing project involving the SHNF and your organization?
9. What do you think about the process? Were your expectations about the process met? (Why or why not?)
10. How did it turn out? Were your expectations about the outcome met? (Why or why not?)
11. Have there been any past projects that your organization has worked on with the SHNF that did not turn out as you hoped? Why/why not?
12. Overall, are there any barriers to working with the U.S. Forest Service? How could they be minimized or eliminated?
13. Do you think the U.S. Forest Service will change the way it manages our national forests in the future?
14. Do you think local stakeholder groups will continue to stay involved in natural resource decision-making as they are today? More or less?

Data analysis. The verbatim transcripts were analyzed and interpreted based on the grounded theory approach. This approach uses a qualitative research method for identifying themes that emerge from text and linking the themes into substantive and formal theories (Glaser & Strauss, 1967). The grounded theory method is an inductive approach which is grounded in the data and allows understanding to emerge from text (Bernard, 2005). In other words, it does not require preconceived theorizing, rather

existing literature is used and integrated, “at the time when the inductive process is largely finished” (Connell & Lowe 1997, p.167).

The first step of data analysis was for the researcher to immerse herself in the participant’s story and try to gain a comprehensive understanding of that person’s perception and experience. Verbatim transcripts were then analyzed through a process of open coding, which allowed for the emergence of initial themes within each narrative (Glaser & Strauss, 1967). The themes were used to describe and interpret the meaning of a particular paragraph in the transcript (e.g., lack of funding, environmental impact, and leadership). Next, the researcher engaged in a process of axial coding, whereby she made connections between major themes and identified context and conditions that influence these themes. This step was guided by tacit knowledge, theoretical sensitivity, and an iterative process that constantly compare these data with relevant literature. Representative quotes from informants were used to provide examples from these data to support the emerging themes. The researcher’s field notes (e.g., issues relevant to the interview process, issues relevant to research literature, and informants’ comments) also facilitated the analysis process.

Grounded theory has several advantages when compared to other qualitative research methods. The major advantage is that it allows tacit understandings to be formed into rigorous theories without a priori definitions. In such, the grounded theory approach establishes theories from the “bottom up”, words, actions, and knowledge of people, rather than from the position of investigators. Further, the comparative and self-correcting nature of data analysis not only refines the interpretation

of data but also captures the nature of the social processes involved in study phenomena. A number of researchers have already used the grounded theory approach to effectively understand human dimensions of natural resources (Hunt, Lemelin, & Saunders, 2009; Theodori, 2005; Trentelman, 2009; Tuler & Webler, 1999).

This study employed several validation procedures to ensure the rigor and credibility of the results. The triangulation of observers was used to, “reduce potential bias of single person doing all the data collection and provide a means of more directly assessing the consistency of the data obtained” (Patton, 2002, p. 560). Each of the emerging themes was described in rich detail, using actual participant quotes as evidence (Creswell & Miller, 2000). Further, the final interpretation of these data was sent out for member checks. Participants were asked to verify any inaccuracies in their transcripts or in the interpretation of what they meant (Lincoln & Guba, 1985).

Quantitative Method

Quantitative method was employed to evaluate collaboration outcomes and test the proposed model and hypotheses. Two procedures including pilot study and internet survey were conducted.

Pilot Study

A pilot study was conducted to pretest the initial survey instrument with a sample of 30 representative participants from the study organizations. The pilot study was conducted using the Qualtrics online survey system (www.qualtrics.com). Results of the completed questionnaires were used to help further refine the survey questionnaire: to

confirms that the scales were clear, used appropriate language, had no obvious errors or omissions, and had adequate internal consistency. We did not address many of the validity issues (e.g., dimensionality, group differences) because appropriate analyses for validity testing would clearly require larger samples than commonly used in pilot studies for initial instrument development. The sample size for a pilot study is influenced by many factors and varies by case. However, Hill (1998) suggested a sample of 10 to 30 participants for pilots in survey research. Such a sample size has many practical advantages such as simplicity, easy calculation, and the ability to test hypotheses (Isaac & Michael, 1995).

Member Internet Survey

After the pilot study, a web-based survey was conducted to collect quantitative data. A web-based survey was chosen for this study for several reasons. Most importantly, all members can have quick and easy access to a survey questionnaire at any location any time. It is also a cost savings means to collect quantitative data when compared with a traditional mail survey. Web-based questionnaire designs also provide a refined appearance, drop boxes with long lists of answer choices, and immediate data coding (Dillman, 2007).

Sampling and data collection. Three associations including the Trail Riders of Houston, the Greater Houston Off-Road Bicycle Association, and the Lone Star Hiking Trail Club agreed to participate in this survey. A sub group of the Sierra Club of Houston, which is actively involved in the trail maintenance at the Lone Star Hiking Trail, participated in this survey as well. The Sam Houston Forest Equestrian

Association withdrew participation in the online survey due to a lack of interest and members' information privacy concerns. As a result, a sampling frame of 807 was compiled for data collection. Survey data were collected from April to August, 2010. The Tailored Design Method for internet surveys was employed (Dillman, 2000). In an email invitation, members were provided with a brief description of the study and an informed consent form. Interested participants clicked a URL link that took them directly to the questionnaire. Non-respondents were emailed a reminder message twice before data collection was ended.

Measurement. In developing survey instruments for the current study, existing scales were first considered and examined for their relevance, adaptability, validity, and reliability. Where no compatible instruments were discovered, new scales were developed by using a combination of original items and modified items from the literature, interview results, and expertise of land managers. The results of the pilot testing were analyzed for internal consistency using Cronbach's Alpha and item-to-total correlations. A scale displays its reliability if its Cronbach's Alpha is greater than .6 and item-to-total correlations is greater than 0.35 (Bearden, 2001).

Motivation for joining voluntary associations. A six-dimensional scale was developed for this study to investigate the motivation for joining *voluntary associations*. The 20 items listed in Table 3 were derived from past literature (Caldwell & Andereck, 1994; Dennis & Zube, 1988; Ryan et al., 2001) and our interview results. Item wording was revised to fit for the current study. Respondents were asked to rate the importance of each reason for joining the organization (1 = not at all important to 5 = extremely

important). Pilot testing results showed that all dimensions had Cronbach's Alpha value greater than 0.6. Although two items "Organized groups are not very effective in influencing environmental/outdoor recreation issues" and "To have fun in the outdoor environment" had low item-to-total correlations scores, they were still included in the final survey because of limited number of items in each dimension.

TABLE 3 Motivation Scale for Joining Voluntary Associations

Scale Dimensions and Items	Cronbach's Alpha	Item-to-total correlations
Helping the Environment	.862	
1. Improves the environmental/outdoor recreation quality		.799
2. Helps sustain natural areas		.637
3. I feel compassion toward environmental/outdoor recreation problems		.795
Learning	.720	
1. I can learn about the natural environment		.456
2. Obtain new knowledge through direct, hands-on experiences		.732
3. I can learn about how to work effectively with others		.463
Organization	.650	
1. Supports the group's effort to influence government action on environmental/outdoor recreation problems		.750
2. Organized groups are not very effective in influencing environmental/outdoor recreation issues		.143
3. If the group achieves its goals, my life and my children's lives will benefit		.614
Social		
1. To meet new people		.489
2. People I am close to encourage me to belong		.599
3. The personal contacts I have made through this organization have been useful to me		.690
4. Allows me to work with good leaders		.594
Self-Enhancement	.831	
1. To feel I am doing something useful		.796

TABLE 3 Continued

2. It makes me feel positive to contribute	.656
3. Feeling peace of mind	.631
Material	.669
1. Group membership will help me to succeed in my business or career	.482
2. I can get member discounts	.423
3. I can participate in special events hosted by the organization	.680
4. To have fun in the outdoor environment	.382

Enduring involvement. To measure enduring involvement, McIntyre and Pigram's (1992) involvement scale was used (Table 4). Their scale is composed of three dimensions: attraction, centrality, and self expression (1= strongly disagree to 5=strongly agree). Previous studies have concluded that the scale was reliable and valid (Kyle et al., 2004; Kyle & Mowen, 2005). The pilot study also indicated satisfactory scale reliability (Cronbach's Alpha > 0.8, item-to-total correlations > 0.5).

TABLE 4 Enduring Involvement Scale

Scale Dimensions and Items	Cronbach's Alpha	Item-to-total correlations
Attraction	.882	
1. This organization is very important to me		.767
2. Engaging in the group is one of the most satisfying things that I do		.783
3. This group interests me		.763
4. I really enjoy being a member of the group		.802
Centrality	.877	
1. I find a lot of my life is organized around the group		.808
2. Group participation have a central role in my life		.796
3. I enjoy discussing my group with my friends		.654
4. Most of my friends are in some way connected with the group		.737
Self Expression	.808	
1. My group says a lot about who I am		.587
2. You can tell a lot about a person by seeing them in the group		.578
3. When I participate in the group I can really be myself		.703
4. When I participate in the group other see me the way I want them to see me		.672

Group participation. Based on similar research measuring recreation use experience (Hammit, Kyle, & Oh, 2009; Lee & Scott, 2009), participation level in the voluntary groups was measured with two behavioral questions: (1) How long have you been a member in the organization (categorical)? (2) How many meetings did you attend in the last 12 month (open-ended)? The two variables were transformed into ratio measures by being standardized to a mean of zero and standard deviation of one.

Hypothesized model. Based on the previous discussion, our hypothesized model and the relations among the constructs are presented in Figure 4. In this model, we are primarily concerned with the first order relations among the dimensions underlying each of the constructs. In this model, Motivation (i.e., *Helping the Environment, Learning, Organization, Social, Self Enhancement, and Material*) directly predicts enduring involvement (i.e., *Attraction, Self Expression, and Centrality*), which then directly predicts participation. We also hypothesized all the path relationships to be positive.

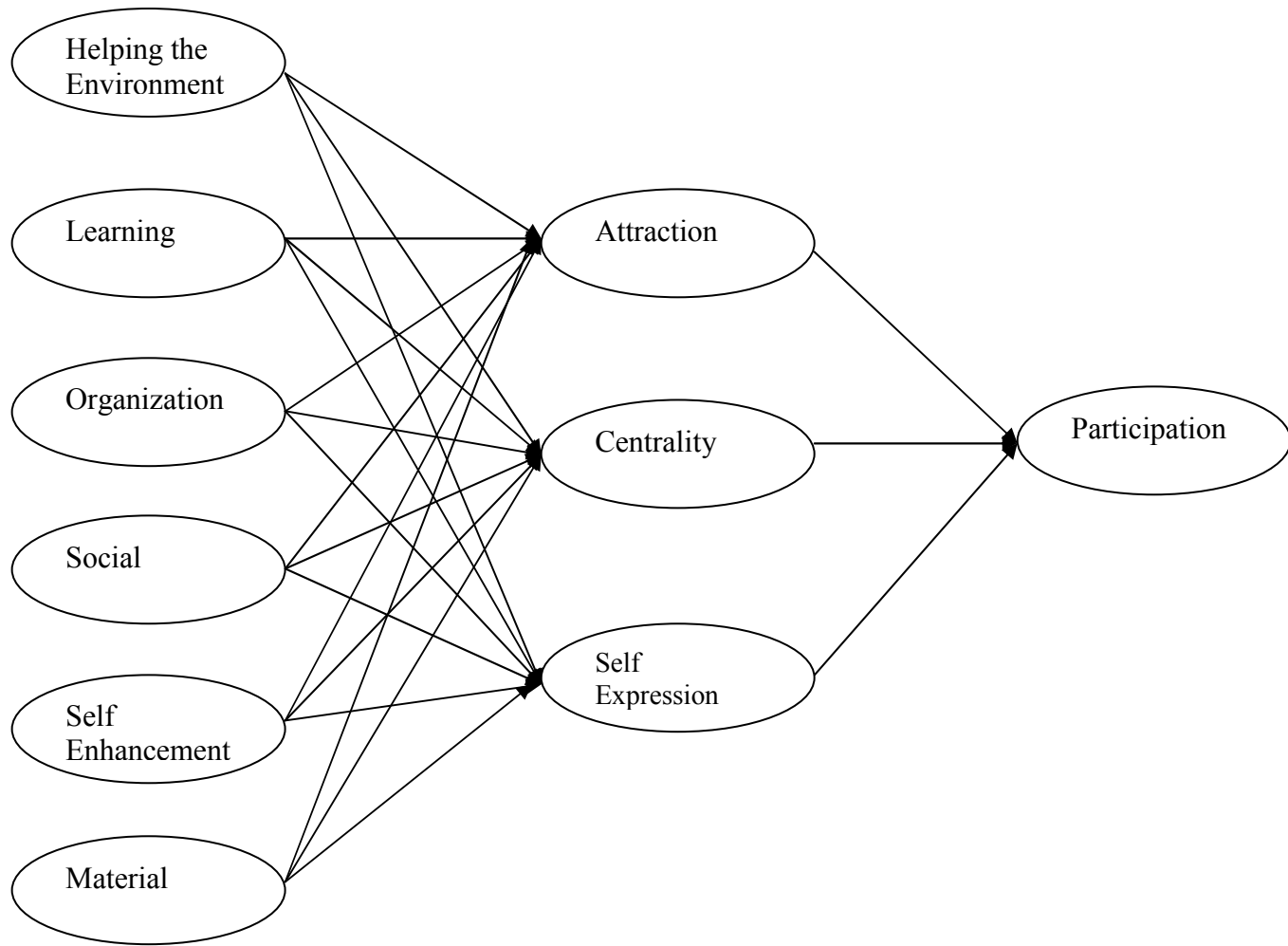


FIGURE 4 Hypothesized model of participation in voluntary association.

Evaluation of collaboration effectiveness. The breadth and duration of collaborative natural resource management require evaluation research to assess multiple dimensions of effectiveness. The measurement framework used in this study included a combination of performance goals and achievement goals. Performance goals are task specific and focused on the desire to achieve highly on external indicators of success (Ames, 1992). They represent specific targets by which performance will be judged. Achievement goals, on the other hand, are more concerned with the pursuit of competence in achievement situations which can influence the way that people approach and experience tasks (Dweck, 1986; Harackiewicz & Elliot, 1993). They represent a subjective conception of outcomes.

In this study, performance goals were evaluated by examining the effects of collaboration on accomplishing specific forest management objectives. Due to the lack of baseline and post-project monitoring data, collaboration effects with regard to forest management objectives were measured by members' perceptions. As shown in Table 5, respondents were asked to evaluate collaboration effects on 11 objectives (1=strongly disagree to 5=strongly agree). The items were derived from past literature (Klein & Wolf, 2007; Leach, 2002; Tarrant, Cordell, & Green, 2003). The achievement goals were measured by assessing the effects of collaboration on enhancing collaboration potential for stakeholders (Table 6). The scale was constructed using multiple sources including relevant literature (Beierle, 1999; Chess & Purcell, 1999; Buchy & Hoverman, 2000; Germain et al., 2001; Leach, 2002; Selin et al., 2000; Tuler & Webler, 1998), interviews results, and expertise from the researchers (Tables 5 and 6).

TABLE 5 Forest Management Objectives

Forest management objectives
1. To enhance the ecological sustainability of the forest
2. To protect habitat for abundant plant and animal species
3. To increase economic prosperity in the local community
4. To reduce the risk of catastrophic fire
5. To minimize land fragmentation near the national forest
6. To protect air quality
7. To protect sources of clean water
8. To provide better access, facilities, and services for outdoor recreation
9. To maintain the scenic beauty of national forest
10. To provide more timber products and materials for local industries and communities
11. To protect private property rights near the forest

TABLE 6 Indicators of Stakeholder Collaboration Potential

Stakeholder collaboration potentials
1. It enhances resource sharing between the forest and the public
2. It helps to leverage outside resources for collaborative projects
3. It builds up connections between the forest and local communities
4. I have a better understanding of the biological processes in the forest
5. I have a better understanding of the different forest user groups
6. It reduces recreation conflict among groups
7. I have more confidence in the decisions made by management
8. I have increased trust that management will do what is right for the forest
9. It has increased litigation over management decisions
10. I have more input on actions on resource management issues
11. My input does not influence the decisions made by management
12. It limits the implementation of forest projects
13. I believe that consensus based decision-making is the most effective way to arrive at natural resource decisions
14. Over time, I have learned more about how collaborative activities can be more effective
15. I am committed to making collaborative planning efforts work with management
16. I believe that consensus based decision-making is the most effective way to arrive at natural resource decisions
17. Over time, I have learned more about how collaborative activities can be more effective

Demographic characteristics. The questionnaire included four questions on respondents' demographic information. These variables included: gender, age, level of education, and ethnicity.

Data analysis. The Statistical Package for the Social Sciences (SPSS 17) and Analysis of Moment Structures (AMOS 18) were used to analyze survey data. Prior to descriptive analysis and model testing, the following statistical data analyses were conducted in SPSS for data screening. First, several assumption tests including outlier, multivariate normality, and multicollinearity were performed to reduce the systematic errors and produce more meaningful results. After excluding 20 cases with missing values, a total of 335 responses were retained for further examination. The Skewness and Kurtosis tests suggested that all measured variables were found to be normally distributed. After examining the standard deviation, Cook's distance, and student residuals, five respondents were identified as outliers. Pearson's correlation test was employed for diagnosing multicollinearity. Tabachnick and Fidell (1996) suggest that multi-collinearity is a problem when correlations between independent variables are greater than 0.90; variance inflation factors (VIF) are greater than 10; and tolerances are less than 0.10. Multiple imputations were performed on missing values in the dataset. The results did not show multicollinearity to be problem among variables.

Descriptive statistical analyses such as frequencies, means, and standard deviations were performed to profile the respondents in terms of their demographic characteristics and organizational participation. The perceived effects of collaboration were subjected to exploratory factor analysis (EFA) with the Varimax rotation to

identify underlying dimensions. The criterion of an eigenvalue >1 was used in extracting factors (all factors with less than 1 were discarded). Items with communalities lower than .35, factor loading lower than 0.5, and cross-loadings higher than .40 were considered for removal (Kline, 1994).

Four major components were involved in the model testing process, namely Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), validity and reliability testing, and Structural Equation Modeling (SEM).

Exploratory Factor Analysis (EFA). The motivation, enduring involvement, and group participation items were all subjected to exploratory factor analysis (EFA) with the Varimax rotation to identify underlying dimensions. The criterion of the eigenvalue >1 was used in to extract factors (all factors with less than 1 were discarded). Items with communalities lower than .35, factor loadings lower than 0.5 and cross-loadings higher than .40 were considered for removal (Kline, 1994).

Confirmatory Factor Analysis (CFA). Subsequently, Confirmatory Factor Analysis (CFA) was employed to test the fit of measurement models. Five goodness-of-fit indices were utilized: chi-square/degrees of freedom ratio (χ^2/df), comparative fit index (CFI), normed fit index (NFI), incremental fit index (IFI), and root mean square error of approximation (RMSEA). Acceptable range values for the fit indices, according to Hu and Bentler (1998) are $\chi^2/d.f. \leq 2.00$, $CFI \geq 0.90$, $RMSEA \leq 0.08$, $IFI \geq 0.90$, $NFI \geq 0.90$.

Reliability and validity testing. The measurement models were also subjected to the assessment of reliability and validity. The reliability of the measurement models,

which also refers to the internal consistency of indicators measuring the underlying factors (Fornell & Larcker, 1981), was examined using Cronbach's Alpha, composite reliability, and average variance extracted (AVE). A factor displays its reliability if Cronbach's Alpha is greater than .70 even though .50 is considered acceptable in studies at an exploratory stage (Bagozzi & Yi, 1988). Composite reliability is similar to Cronbach's Alpha, which provides evidence of internal consistency among the items measuring the same latent factor. According to Bagozzi and Kimmel (1995), a factor displays its reliability if its composite reliability is greater than .60. Average variance extracted estimates (AVE) measures the amount of variance explained by the items in a scale relative to measurement error. Netemeyer, Bearden, and Sharma (2003) suggested a threshold value of AVE above .50 to be acceptable for newly developed scales.

Discriminant validity refers to the degree to which the underlying dimensions of a scale can be distinguished from one another (Netemeyer et al., 2003). The criterion for discriminant validity is when the 95% confidence interval (± 2 standard errors) around the disattenuated correlation does not contain a value of 1 (Anderson & Gerbing, 1988). Convergent validity is referred to as the degree to which the measurement scales represent the theoretical constructs to be measured (Trochim, 2001). Convergent validity is revealed when all factor loadings are significant (Fornell & Larcker, 1981). Convergent validity of the scale was also supported when all the factor loadings are greater than .45 (Netmeyer et al., 2003).

Structural Equation Modeling (SEM). After the assessment of the adequacy of the measurement models, Structural Equation Modeling (SEM) was used to test causal

relationships among latent variables. SEM is a multivariate technique that combines aspects of multiple regression and factor analysis to assess a series of dependent relationships simultaneously, which is not possible using other multivariate techniques such as multivariate analysis of variance or multiple regression (Hair, Anderson, Tatham, & Black, 1998). Model-trimming was utilized to find most parsimonious model which is well-fitting by the selected goodness of fit indices. Model-trimming deletes one path at a time until a significant chi-square difference indicates trimming has gone too far. A non-significant chi-square difference means the researcher should choose the more parsimonious model (the one in which the arrow had been dropped).

CHAPTER IV

RESULTS

This chapter presents the results from the semi-structured interviews and the online membership survey. Following the order of the interview guide, the interview results were divided into three sections: organizational characteristics, organizational concerns about forest management, and experiences of inter-organizational collaboration with the Forest Service. Next, the survey results are presented in three sections: descriptions of the members' profile, members' evaluation of collaboration effectiveness, and model testing of members' participation in voluntary associations.

Qualitative Results

Organizational Attributes

Lone Star Hiking Trail Club. The Lone Star Hiking Trail Club (LSHTC) was formed in 1995 and is affiliated with the American Hiking Society. The mission of the club is to educate the public about hiking trails and provide volunteer assistance for trail maintenance and improvement. The club name reflects its emphasis on the Lone Star Hiking Trail located in Sam Houston National Forest. The LSHTC hosts events every month, offering guided group hikes, camp-outs and trail maintenance hikes regularly. The event locations were primarily on the Lone Star Hiking Trail, which is a 128-miles "footpath only" trail stretch from north of Montgomery, passing south of Huntsville, Coldspring and ending northeast of Cleveland, Texas (Lone Star Hiking Trail Club, 2010). The LSHTC has about 85 members.

Trail Riders of Houston. Established in 1969, the Trail Riders of Houston (TRH) is a diverse group of people interested in off-road motorcycling. The mission of the TRH is to promote off-road motorcycling by sponsoring competitive, family-oriented events and to enhance the image of off-road motorcycling through civic and political action (Trail Riders of Houston, 2010). The TRH organizes a wide arrange of activities. For instance, it offers family oriented events every two to three weeks and involves all facets of off-road cycling. The TRH also sponsors many large scale events such as National Enduros, National Hare Scrambles, National Two Day Qualifiers, Texas State Circuit Enduros, and Poker Runs, which are long distance time tracking motorcycle races. The major locations for group events are the Sam Houston National Forest, New Waverly, TX and Skull Creek Cycle Park, Altair, TX. TRH has been increasingly involved in civic action and resource stewardship. From 1968-1996, the TRH adopted 6.2 miles of highway in the Sam Houston National Forest where they picked up trash 4 times a year up. Currently, the TRH maintains approximately 60 miles of multi-use trails in the Sam Houston National Forest. There are approximately 150 members in TRH.

Sierra Club Houston Regional Group. The Sierra Club-Houston (SCH) is a regional chapter of the National Sierra Club located in San Francisco. The mission of the SCH is to foster the quality of the environment within its territorial limits and to work for the purposes of the Sierra Club, including: “To protect and conserve the natural resources of the State of Texas, the United States, and the world; to undertake and publish scientific and educational studies concerning all aspects of man’s environment and the natural ecosystems of the world; and to educate the people of the United States

and the world the need to preserve and restore the quality of that environment and the integrity of those ecosystems.” (Sierra Club, 2010). In pursuit of its mission, the SCH formed a number of standing committees in the areas of conservation, political action, and outreach. Each committee offers distinctive activities such as conservation classes, congressional lobbying, proposal development, service projects, outreach activities, social gathering, and organized outdoor trips. Currently over 5,000 Texans count themselves as members of the SCH.

Greater Houston Off-Road Biking Association. Formed in 1999, the Greater Houston Off-Road Biking Association (GHORBA) joined forces with the Houston Area Mountain Bike riders Association (HAMBRA) and the Memorial Park Mountain Bike Association (MPMBA) to save the trails in Memorial Park from closure to all cyclists (Greater Houston Off-Road Biking Association, 2010). Over the years, GHORBA has expanded its goals, which include: (1) advocate for greater recreation trail access with public and private land owners and managers, (2) build and maintain sustainable multi-use trails, (3) education of the public on sustainable trail building, trail maintenance, and riding skills and safety, (4) partner with the community to promote youth cycling, and (5) hold social events and races for the enjoyment of off-road cyclists and stakeholders. The organization offers a wide range of activities such as organized races, skill clinics (workshops for members to learn about skill techniques, trail etiquette, or equipment maintenance), and fun events. GHORBA also organizes volunteer labor for trail building and maintenance in local parks, state parks, and the Sam Houston National Forest. GHORBA had approximately 500 members in 2009.

Sam Houston Forest Equestrian Association. The Sam Houston Forest Equestrian Association (SHFEA) was formed in July 1994, after a meeting with forest user groups and the Forest Service at the Sam Houston National Forest in 1993. The mission of SHFEA is to work with the Forest Service and other user groups of the Sam Houston National Forest in building equestrian trails and campgrounds. The group organizes horse riding events and volunteer activities for trail building. The average membership is about 40.

Group comparisons. Key characteristics of voluntary groups in this study are highlighted in Table 7. The majority of these groups were established in the last 20 years—four out of five were established after the 1990s. Only one group existed prior to 1970 (Trail Riders of Houston). All groups were autonomous local groups except the Sierra Club Houston. Based on the stated missions of each group, we can see that Sierra Club Houston is engaged in a broad range of issues dealing with human interactions with nature, including climate change, energy use, habitat protection, ecological restoration, water/air quality monitoring, and land protection. The other four groups focus primarily on promoting outdoor recreation experiences and protecting recreation resources.

In terms of membership numbers, the SCH has many more members than the other groups. Reported activities of the study groups include social and recreational activities (e.g., events racing, trail rides); stewardship activities (e.g., trail maintenance, trail building); education and communication (e.g., skill clinic, lobbying; conservation class); and partnership activities (e.g., partnership with the Forest Service, partnership with youth organizations).

Patterns of change and continuity in groups over time were also identified from the interviews (Table 7). Greater Houston Off-Road Biking Association (GHORBA) reported rapid growth in membership and involvement in recreational planning since its establishment in 1999. The Lone Star Hiking Trail Club (LSHTC) had provided more organized hikes in the last few years. LSHTC reported a shift in group focus from stewardship efforts to political involvement. LSHTC respondent explained that “productive use of time and energy for trail maintenance was being used to attend meetings in defense of the LSHTC from municipalities wanting to flood the wilderness area and the Forest Service’s plan to open the trail to bicycles (with the urging of GHORBA)”. For the Trail Riders of Houston (TRH), the most notable change was the increased popularity of ATV use among its members. It was also noted that the membership requirement of owning a motorized vehicle had been removed to allow more people to join the club. Organizational changes were also noticed by respondents from the Sierra Club-Houston (SCH). It was recognized that SCH had taken a much broader world view than earlier history. For example, in 2007 the National Sierra Club decided that climate change was its number one priority, dealing with energy essentially. Their priority has subsumed a lot of other issues unless they are connected with climate change. Both the Sam Houston Forest Equestrian Association (SHFEA) and the Sierra Club Houston (SCH) reported experiencing graying and staggering decline in membership over the last few years.

TABLE 7 Group Characteristics

	The Lone Star Hiking Trail Club	Trail Riders of Houston	Sierra Club Houston	Greater Houston Off-Road Biking Association	Sam Houston Forest Equestrian Association
Year founded	1994	1969	1999	1999	1994
Chapters	N	N	Y	N	N
Goals	<ul style="list-style-type: none"> Educate the public about hiking trails in Texas (focus on Lone star Hiking trail Provide volunteer for trail maintenance 	<ul style="list-style-type: none"> Promote the sport of off-road motorcycling Enhance the image of off-road motorcycling through civic and political action. 	<ul style="list-style-type: none"> Explore, enjoy and protect natural resource Practice and promote the responsible use resources; Educate and enlist humanity to protect and restore the quality of environment Use all lawful means to carry out these objectives. 	<ul style="list-style-type: none"> Advocate for greater recreational trail access with public and private land owners and managers Build & maintain sustainable multi-use trails Educate the public on sustainable trail building, trail maintenance, and riding skills and safety Partner with the community to promote youth cycling Hold social events and races for the enjoyment of off-road cyclists and stakeholders 	<ul style="list-style-type: none"> Work with the Forest Service and other user groups of the Sam Houston National Forest in establishing equestrian trails and campgrounds. To promote equestrian activities
Number of Members	85	150	4000	500	60
Group activities	<ul style="list-style-type: none"> Trail maintenance Lead organized hikes 	<ul style="list-style-type: none"> Riding events Trail maintenance 	<ul style="list-style-type: none"> Develop conservation proposals Lobby Conservation Classes Social gathering Organized outdoor outing Trail maintenance Inner city outings 	<ul style="list-style-type: none"> Organize races Skills clinics Group rides Social events Build and maintain trail 	<ul style="list-style-type: none"> Trail rides Trail building

Concerns about Forest Management

The qualitative analysis resulted in five major thematic categories of concerns about the Sam Houston National Forest: (1) recreation access, (2) financial support for recreation, (3) conflicts between user groups, (4) communication with the public, and (5) sustainability of trail system. These categories give insights into how forest issues are inter-related and need to be examined from the ecosystem management approach. This approach integrates environmental protection, economic development, and community well-being into the planning process.

Recreation access. Lack of recreation access to forest land was most frequently cited as a critical challenge to the SHNF. High use in the Double Lake recreation area and Caney Creek recreation area demonstrates a need to expand recreation opportunities in the forest. The results showed that the need to increase access to trails corroborates with the organization's need to expand group membership. As one participant explained, *"The more multi-use trails we have, the more we can race here. The more local races are, the better the membership is"*. The unbalanced number of trails allocated for different user groups also raised the associations' attention for more access. Currently, hikers have 129 miles of trail, motorized users have 85 miles (multi-use but primarily for motorized use), while cyclists have only 8.3 miles (multi-use but primarily for mountain biking), and equestrians doesn't have their own trail at all. Hence, respondents from GHORBA exhibited a high desire to expand mountain bike trails as there are very limited number of trails for mountain bikers. Equestrian users are also seeking cooperation with the Forest Service and other organizations in building new trails.

Further, respondents feel that current access to existing trails is quite restrictive. They want the Forest Service to not only build more multi-use trails, but also to keep the existing trails open as much as they can. Some respondents reported that closing trails abruptly can seriously disturb the organization's events. The two passages below exemplify this issue:

We plan big national events there. The problem is that we can have the event planned for this day, and people coming from all over the United States to this event, then someone from the forest called the evening before and said "yeah, it had rained a little and we're not gonna do it". Then we're on the phone like 'don't come, don't come' try to cancel plans. If they cancel event in the last minute, it puts us in a really bad situation.

They have to realize that for us, when it rains, if it rains a little bit, it's a perfect riding for us. If it rains over an inch, they close it. That's the main thing. They are closing it based on weather forecasting, but the weather forecasting doesn't always fall through.

Financial support. Respondents talked about how a lack of funding can impact the management at SHNF. They believe that the SHNF is experiencing funding shortages for staff, trail maintenance and restoration, and building new facilities. Securing adequate funding sources was acknowledged by respondents as essential for the forest to be successfully managed. Although there is a strong need for more access to forest land, none of this could happen without funding. One respondent who used to work in the Forest Service feels that the funding allocations are not favorable toward recreation

development. He felt that over time there had been a decrease in the money that goes into recreation. Since recreation is often a low priority, it is often the first to receive budget cuts. One respondent highlighted that “*we has no money for trails for years, there is never any budget for trails.*” Due to the lack of funding, a few respondents feel that recreation at the SHNF is not managed at all.

Compared to the budget situation in the U.S. Forest Service, some voluntary groups are very successful in engaging in fundraising ventures, networking with other organizations, and developing grant proposals for pooling financial resources together. For example, GHORBA was awarded a \$120,000 grant from The Texas Parks & Wildlife Commission (TPW) in 2008 to expand Double Lake Trail in SHNF. In 2010, GHORBA received another \$20,000 matching funds from the Northwest Cycling Club for their project on expansion of the trails at Huntsville State Park. These fundraising successes demonstrate their capacity to work collaboratively with many other partners. Therefore, informants suggested that the Forest Service needs to be diligent in searching for resources:

Forest Service has a small budget and they can't do much. I have no budget but I do much. We do tremendous amount of work. I can find resources.

We are tired of hearing about a lack of money and personnel to do the job. We have heard this same excuse since at least the 1980's. From our perspective, this is an old excuse and not something new.

Recreation conflict. Recreation conflict over the use and management of forest resources was seen as another emerging issue. The increased level of conflict between

user groups was manifested in the conversations with key informants. Some respondents hold negative attitudes toward other user groups because they feel that the Forest Service decisions are unfair for their group. In particular, according to one participant, “*The Forest Service seems to be in favor of all trails being multi-use and if users do not bring in money then the Forest Service may consider their trail as unimportant and unsustainable.*” Conflict also exists between people with different environmental values. OHV users asserted concerns of potential conflict because “*extreme environmentalist groups wanting it (the forest) closed*”. SCH members raised the fact that the OHV trail was in poor shape and caused unacceptable natural resource damage for decades. A few respondents stated that illegal ATV use on hiking trails has ruined their recreation experience because “*the trail is always meant to be a back country primitive trail, which is very small and very intimate*”. The results also revealed that these conflicts are often caused by a lack of communication with user groups. The two quotes below illustrated concerns about this conflict:

The highest bidder gets to call the shots and the natural and original travel mode that people have always used (hiking, walking, and even running) is forgotten and neglected.

Some people don't like others. For example, hikers don't like motorcyclists. It makes things kind of difficult. We are not there to tear it up, we wanna respect it, and we wanna enjoy it. If something's going alone, we wanna take care of it. But there are a lot of people that's really earthy. They just feel like... we don't wanna walk over there, we don't wanna touch this. There are even stories of people bring

in an endangered species and put it in the forest and go ‘Hey, look! We found one right here, so you can’t ride here anymore’. Then they figure out that’s not even from this country, that’s not born here, someone brought them in.

Communication and outreach. Respondents regard communication with the general public as an important issue at the SHNF. In particular, they expressed the need for the Forest Service to use a variety of methods to engage and inform current and potential users about the status and potential of natural resources in the forest. Taking guided field trips as a positive example, one informant described this type of experience as a great opportunity to gain first-hand knowledge about what an (un)sustainable forest looks like and the impact of management decisions can have on forest sustainability. On the other hand, several informants indicated that they have experienced difficulties when trying to acquire accurate and understandable information (e.g., maps, organization information) from the Forest Service. Respondents also felt that the Forest Service needs to invest more purposive efforts in marketing itself or getting the word out to the local residents about what is offered at the SHNF. Illustrative comments include “*They need to let people know that the resource is available*” and “*I knew very little about it. I don’t know how they are organized, who to go to, or how the system is set up, unless you’re an insider you don’t really see a lot.*”

Further, it is believed that mechanisms which provide information from the government to the public will be useful for increasing transparency in agency decision making. Many respondents consider effective communication as a sign that the Forest Service takes democratic responsibilities seriously. However, there is a concern that the

Forest Service does not respond to public comments promptly. One respondent gave an example:

There was a proposal to put pipelines through where our organization thinks is a very sensitive area (wetland). We want to make sure that they do it as causing little damage as possible. We requested a meeting on Dec 23, 2009. Now it's March, 2010. Never heard a word, I'm tired of calling.

Forest sustainability. Respondents mentioned several comments about the sustainability of the SHNF. Their idea of a sustainable forest is closely associated with biodiversity protection, responsible use of trails, minimizing recreation impact, and forest stewardship. They also recognized that sustainability of the forest requires an active role for citizens to achieve on-the-ground results. The study groups have been involved in a number of stewardship activities such as soil monitoring, trail restoration, garbage pick-up, species management and so on. Several respondents felt that sustainable management not only increases the quality of their recreation experiences but also enhances their group image and pride. The management of the multi-use trail in the SHNF was regarded by some respondents as an excellent example of a sustainable trail system. One respondent stated:

We have a great trail system, so we need to sustain our trail system. We're trying to set up an example of how the trail system should be run. Our trails are managed toward impact the forest the least amount. We are the only one that meets the highest level of compliances with the Forest Service.

We make sure our uses are legal and compliant with the requirement. Everybody is straight up; we push them to follow the role. We help the Forest Service setting an example for the rest of the community to follow.

Our trail system has been set as an example in the country. They had people come here from Canada, Michigan, etc. We show them an example of what first class system looks like. Our organization has always been involved in that for 40 years.

Overall Relationship with the Forest Service

The interview data indicated that the five groups varied in their relationship with the Forest Service. LSHTC perceives their relationship with the Forest Service as, “*usually neutral and presently defensive.*” The main reason was that in 2006, 2008 and now in 2010, the Forest Service was proposing to allow bicycles on the Lone Star Hiking Trail, portions of which had been designated as a National Scenic Trail. For SCH, it was reported that since 2005 they have had a better relationship with the Forest Service. In 2009, the SCH signed an agreement with the Forest Service to end a lawsuit. It was the first time that the Forest Service had not had a lawsuit in 20 or 30 years. The informant from SCH also used the term “*cautiously optimistic*” to emphasize that there is still a lot of room for improvement. Compared with the first two groups, respondents from SHFEA, TRH and GHORBA reported managing a positive working relationship with the Forest Service. They also acknowledge that the relationship has gone through cycles as the Forest Service personnel have changed, but had been good for the most part.

Collaborative Projects

These voluntary groups have partnered with the Forest Service on a variety of projects over the last decade. For example, GHORBA received a grant to expand the multi-use trails in Double Lake. This construction started in May 2010 and is expected to be finished by October, 2010. Since 1994, the LSHTC had performed trail maintenance and led hikes on the Lone Star Hiking Trail and highway clean-up projects, contributing many thousands of volunteer hours. The TRH members are also involved in trail maintenance for their multi-use trail. They also reported undertaking the SWECO training classes provided by the Forest Service, which is a type of tractor used for trail maintenance. The SHFEA completed an equestrian parking lot on the west side of the forest a few years ago with the Forest Service assistance. The SCH reported participating in a variety of projects such as restoration projects in the forest region, trail maintenance on the Lone Star Hiking Trail, building board walks, and tourism planning for the SHNF.

Furthermore, the Forest Service at SHNF is currently working with the public (including all the study groups) to form a Sam Houston Trails Coalition. The coalition will work with federal, state, county and local entities. This coalition will plan, develop, fund, implement, and maintain a comprehensive sustainable trail network for diverse outdoor recreational use while protecting the natural resources and educating others.

Factors that Influence the Effectiveness of Collaboration

Positive attributes. The analysis of interview data yielded three process attributes which have had a positive influence on collaboration effectiveness. These attributes

include: (1) strong leadership at the local level, (2) inclusion of diverse stakeholders, (3) resource sharing. A description of each attribute follows.

Strong leadership at the local level. Many informants perceive the local Forest Service staff as people providing good leadership, despite the institutional constraints of a large bureaucracy. They noted that since the new district ranger came, their working relationship has improved considerably. Representative comments include “*the new district ranger respects various voluntary groups*” and “*He comes in with a different attitude and it permeates into the employees*” and “*He is providing excellent cooperation with our project*”. Concerns were also expressed about whether things will change if the new ranger leaves. Examples of this theme can be found in the following descriptions:

In the past, we have not had any leadership from the forest. The previous ranger was retiring and he didn't want to make ways. Now we have a new ranger there and he seems to be providing some leadership and that's very good. I think he has realized the value of such a nation forest next to a huge metropolitan area. 10 years it was not recognized, 5 years ago it was not recognized.

We only have one trail. We want to change that. We were shut down by previous ranger who is not interested in any more trails. It's only since we got a new ranger, that we're really being able to expand our opportunities. Warren is strong effective leader. He has been responsive to our needs. He wants to work with people, and has been a major change in the forest management.

Inclusion. Inclusiveness (diversity) was considered by the respondents as an integral part of the collaborative approach to governance. The majority of the study

participants mentioned that the newly formed trails coalition is an example of group composed of a diverse set of stakeholders. This coalition can be seen as a partnership of land and recreation managers and individual trail users, local residents, recreation user groups, and other private citizens and businesses. In addition to the study groups, the coalition effort includes other voluntary associations such as youth organizations, veteran associations, and trail-related associations.

Most informants believe that with the establishment of the trails coalition, all trail users in the forest are more likely to express their views toward forest management. They also expected that forest management will improve with the coalition. In the words of some participants:

I think the coalition is a growing process, and it's important to have different user groups coordinate to maximize trail use and enjoy the facilities.

I see other groups wanting to have trail system. We all have other groups talk to each other. Never before that have I seen proposals for trail system. Everybody has their own idea what they wanna it to be.

They have gotten a consultant down to try to coordinate a coalition. I think that's a value. We can work together and we can have more voice.

Resource sharing. Informants strongly emphasized the role of resource sharing in the collaborative process. Resources mentioned include information and skill development, human resources, as well as financial resources. Participants talked about thousands of volunteer hours their groups have contributed for trail maintenance and development in the forest. They also mentioned a variety of training programs initiated

by the Forest Service, such as the Trail Planning, Trail Design, a Trail Layout class to the Forest Service staff, group volunteers in 2006 and 2007, the 40 hour SWECO Trail Dozer certification class in the spring of 2008, and the GPS monitoring training seminars in 2009. These participating volunteers included members of the Trail Riders of Houston (TRH), The Greater Houston Off-Road Biking Association (GHORBA), Sierra Club Houston (SCH) and the Texas Motorized Trails Coalition (TMTC). Participants are keenly aware of the benefit of partnerships to enhance the ability to mobilize internal and external financial resources. For example, in 2006 and 2007 The TRH-USFS partnership applied for and was granted funding from the Texas Parks and Wildlife Department (TPWD) administered through the Recreational Trails Program (RTP). This grant will allow the group to renovate the Sam Houston Multi-Use Trail. Some illustrating statements for this theme are below:

Out in the north wilderness area, we built a huge board walk. It was 2000 hours with the 2 scout groups. The Forest Service cooperated with us. It's in the little lake creek area. The problem is when it rains, it rains a lot and it took a long time to dry. So we bring in the metal and all the lumber to build it. It took 4 years. The Forest Service got us a big trailer to transport the lumber. They gave us the lumber to do it. Forest initiated the training (SWECO). First training is a 40 hours training. Three to four volunteers from each club. Once we get the trained, we can continue to train other members.

Negative attributes. Four factors were identified as barriers for collaboration: (1) inadequate communication, (2) lack of input in decision-making, (3) bureaucratic

organizational characteristics, and (4) time commitment. A description of each attribute follows.

Inadequate communication. A key concern regarding collaboration effectiveness is the unintended consequences stemming from inadequate communication and lack of meaningful dialogue between the groups and the Forest Service. Some informants have the impression that there's almost no communication between them and the Forest Service. A few others suggest that they provide information to the Forest Service all the time but they don't respond. In several cases, these voluntary groups would like to work with the Forest Service but nothing has happened. Participants reported that several collaborative projects with the Forest Service failed because they have been carried out as a one-way communication so how was it carried out if it was one-way communication and failed?. Here are two examples:

They (The Forest Service) want to get more people using the forest from Houston, so we talked to the Forest Service why don't we focus on wildflowers? We said let's work together to put up some brochures and website that show photos and certain places for tour. We drafted something, but nothing's happening. I don't understand the reason, because it's not explained to me.

We were told there need to be a trail inventory so that we know what's on it and what the problems are. We keep bugging the Forest Service to show us how to do it and we will do it. We'll use your criteria and we'll do the work. We got the Forest Service to give us an initial training on GPS, but we still don't know the procedure for doing it. So you have volunteers but yet we can't seem to get it moving.

Lack of input. The results indicate that public involvement was constrained by limited input in the decision-making process. By input, participants didn't exclusively mean to convince others to achieve what they think is ideal. For most of them, it means that their ideas and concerns have been valued and carefully considered in the deliberative process. One informant feels that her group has little input or input is not taken seriously by the Forest Service. Another informant expressed concern regarding the purpose of forming the Trails Coalition for forest cooperation and agreement, "*this is no doubt a good thing from the standpoint of funding, but I am concerned that the true agenda is to open the trail to bicycles.*" Some respondents also felt that the Forest Service does not value their contributions or efforts. Several examples were mentioned:

We had no input in the decisions. There are two metal bridges on the east. They've been there for years and they've been washed away. We've been telling the Forest Service for 6 years that this needs attention. They sent an engineer to look at it, but they have not shared with us the plan. They have no plan and have no money.

Those bridges are gonna fall into the river!

They (the Forest Service) shut down the whole trailhead. It no longer exists. Now what happens is as people go there, there used to be a way when they would get lost they can get out. Now they have to walk 6 extra miles to get out. So we said if you take that out, there is a danger there! They didn't listen to us at all.

Bureaucracy. This study also revealed that the bureaucratic nature of the Forest Service compounded the collaboration process. Bureaucracy not only refers to the Forest Service's organizational structure, but also their procedures and regulations to manage

natural resources. As the agency creates more and more rules and procedures, its complexity expands. Working with a large bureaucracy can make planning and rule making processes quite intimidating. Some participants felt let down and exhausted by the process. As one stated, *“You have to identify the good people to help you through the process, otherwise you’re dead in the water.”* Another added, *“It’s still a government agency; it still takes a long time to work things. I mean it’s just part of the process. Make government smaller is not gonna happen, you just have to have patient work with them.”* Some respondents openly discussed some of the frustrations that they felt when the rigidity of the Forest Service procedures makes collaborative projects slow down or even impossible to complete. In an effort to build bridges, one explained this dilemma:

If bridges washed away and we want to build a bridge, we can get someone like a boy scout to do an eagle project. They can get the lumber and go out. Now you have to have an engineer from the Forest Service, who goes out there to decide where the bridges are needed and he has to design it, he has to make the specification, he has to place it, and we have no money to pay for that. All bridges must meeting ADA approval no matter where they are on the trail. You know, so it’s like you can’t do anything. Well, we have some ability to do something, but they can’t help you, they just stumble you.

Time commitment. Last but not least, informants suggested that the large amount of personal time required may inhibit future participation in collaborative management. Despite the positive attitude towards public involvement in forest management, informants expressed concerns about time commitment. Several attendants at the Sam

Houston Trail Coalition meeting noted that the meeting was too long (4 hours on Saturday mornings). Others emphasized the difficulty to coordinate voluntary projects.

Here are two illustrative statements:

You got to realize that our club involves volunteers. Someone has to put gas in their car, drive down there, bring lunch, and work all day! You'll always have 5%-10% of people doing 80% of the work.

It's hard to find people's time. Meeting takes long, and no one does this for a living. We all have a life. It's all volunteering.

Future Involvement

Many respondents have the vision that there will be increased public involvement in the SHNF, while a small set of informants feel the contrary. Those who expected less public involvement in the future seemed to emphasize a declining trend of outdoor recreation participation in America. They feel an urgent need to help people learning about the forest, to attract them to experience it and develop personal connections with it. Although respondents varied in how optimistic they are about collaborative natural resource management, they agreed that it will become more and more important in the future. Several respondents felt that there will be more pressure on the public service side than the actual Forest Service side. Many members view the coalition as an opportunity to reduce barriers and improve the process. They also hope more funding would be forthcoming from the Federal Government to support and improve the SHNF.

In addition, differences were also identified on perceived goals of collaboration. Members from GHORBA and TRH voiced that collaboration should be used a means to

“increase land access not conservation to the extreme of no use”, whereas SCH members were concerned about the potential negative effects of emphasizing recreation access. One stated:

I see some more involvement from a recreational perspective, which in one way is good, one way is scary. The reason it's scary is sometime people who are simply in recreation don't have the commitment for protecting the natural resource than maybe some others do. Their bias is that I want do my activity instead of the resource protection come first.

Quantitative Results

Profile of Survey Respondents

Of the 807 questionnaires delivered to general members, 26 were undeliverable, 20 were unusable due to missing data, 335 were completed for a response rate of 41.5 %. The profile of survey respondents is shown in Table 8. Among the 335 respondents, 80% were male and 20% were female. One third of the respondents were 35-44 years old (35.9%), followed by 45-54 years old (30.7%). Educational levels were fairly high, with almost half of the participants having a graduate degree. Approximately 90% of the participants reported their ethnicity as non-Hispanic origin and 80% of the participants were white. Over half of the respondents joined the organization within the last five years. The majority of respondents (77.9%) were actively participating in the organization. On average, the respondents attend four group meetings per year.

TABLE 8 Membership Profile

Characteristics	Percentage
<i>Gender (N= 300)</i>	
Male:	80%
Female:	20%
<i>Age (N=306)</i>	
18-24 years:	1.3%
25-34 years:	10.5%
35-44 years:	35.9%
45-54 years:	30.7%
55-64 years:	16.7%
65 years and above:	4.9%
<i>Education (N=305)</i>	
High school:	6.6%
Some college:	16.7%
Undergraduate:	28.2%
Graduate:	48.5%
<i>Race/Ethnicity (N=300)</i>	
Hispanic origin (Yes):	10.3%
White:	83.5%
Black:	2.4%
Asian or Pacific Islander:	1.2%
American Indian:	2.7%
Other:	2.7%
<i>Years of membership (N=335)</i>	
0-3 year:	36.4%
3-5 year:	23.3%
5-10 year:	22.7%
More than 10 years:	16.7%
<i>Attended group meeting in the last 12 months (Yes)</i>	77.9% (Mean=4)

Evaluation of Collaboration Outcomes

In order to assess the effectiveness of collaborative natural resource management, this study measured the effects of collaboration on achieving forest management objectives (performance goals) and on enhancing stakeholder potentials (achievement goals). Detailed results are reported in the following section.

Effects on forest management objectives. To examine the effects of collaboration on forest management objectives, we asked respondents to rate the performance of their groups in working with the Forest Service to achieve 11 forest objectives on a five point scale from “extremely successful to not successful at all (Table 9). The successful accomplishments (Mean is 4.0 and above) include: enhance recreation access and facilities (4.16), enhance ecological sustainability (4.02), and maintaining the scenic beauty (4.0). A number of conservation efforts such as protection of wildlife habitat (3.76), protection of air quality (3.53), protection of clean water (3.60), fire management (3.39), and control of land fragmentation (3.31) were rated as moderately successful ($3.0 < \text{Mean} < 4.0$). The respondents also felt that their involvement had a moderate positive influence on the local economy (3.55). Further, respondents did not believe that their involvement helped to increase timber and mineral production in the forest.

TABLE 9 Outcomes of Collaboration on Forest Management Objectives

Forest conditions	Mean	SD
1. To enhance the ecological sustainability of the forest	4.02	.85
2. To protect habitat for abundant plant and animal species	3.76	.79
3. To increase economic prosperity in the local community	3.55	.86
4. To reduce the risk of catastrophic fire	3.39	.96
5. To minimize land fragmentation near the national forest	3.31	.88
6. To protect air quality	3.53	.88
7. To protect sources of clean water	3.60	.88
8. To provide better access, facilities, and services for outdoor recreation	4.16	.86
9. To maintain the scenic beauty of national forest	4.00	.81
10. To provide more timber products and materials for local industries and communities	2.91	.87
11. To protect private property rights near the forest	3.06	.86

Effects on stakeholder potentials. The second component of effectiveness is the extent to which collaborative forest management has improved its stakeholders' capacity for achieving tangible, accomplishments in the future (Leach, 2002). Exploratory factor analysis with varimax rotation was employed to reduce 17 indicators into underlying factors. Then factor means were calculated to show the effect of collaboration on each domain (Table 10). A Kaiser-Mayer-Olkin measure of sampling adequacy yielded a test statistic of 0.83, which was well within the appropriate range. The threshold for

inclusion in a factor was 0.5. Two items, “My input does not influence the decisions made by management” and “It enhances resource sharing between the forest and the public were removed from the scale due to low factor loading (<.5). The analysis yielded five dimensions, explaining 69 percent of the variance for this question. These dimensions were labeled as, shared responsibility (M=3.74), consensus building (M=3.68), trust and influence (M=3.54), conflict resolution (M=3.78), and project implementation (M=3.36).

TABLE 10 Outcomes of Collaboration on Stakeholder Collaboration Potentials

	Mean	SD	Factor Loading	Eigen-value	Cronbach's α
<i>Factor 1 Shared Responsibility</i>					
				5.80	.82
1. I have an increased sense of responsibility for the communities near the forest	3.7	.79	.60		
2. It builds up connections between the forest and local communities	3.86	.86	.76		
3. I have an increased sense of responsibility for the environment	3.76	.84	.81		
4. I have a better understanding of the biological processes in the forest	3.66	.80	.71		
<i>Factor 2 Consensus Building</i>					
				1.47	.81
1. I believe that consensus based decision-making is the most effective way to arrive at natural resource decisions	3.55	.99	.67		
2. I am committed to making collaborative planning efforts work with management	3.90	.76	.70		
3. Over time, I have learned more about how collaborative activities can be more effective	3.61	.83	.87		
<i>Factor 3 Trust/Influence</i>					
				1.34	.85
1. I have more confidence in the decisions made by management	3.57	.88	.86		
2. I have increased trust that management will do what is right for the forest	3.52	.96	.77		

TABLE 10 Continued

	Mean	SD	Factor Loading	Eigenvalue	Cronbach's α
3. I have more input on actions on resource management issues	3.53	.90	.61		
<i>Factor 4 Conflict Resolving</i>				1.10	.62
1. It reduces recreation conflict among groups	3.82	.90	.68		
2. I have a better understanding of the different forest user groups	3.81	.74	.82		
3. It helps to leverage outside resources for collaborative projects	3.74	.87	.52		
<i>Factor 5 Project Implementation</i>				1.02	.59
1. It has increased litigation over management decisions (reverse)	3.46	.87	.79		
2. It limits the implementation of forest projects (reverse)	3.27	.90	.85		

The first dimension, shared responsibility, reflected a distinctive role of collaboration in promoting forest community connection. Strong identification with geographic location, biological feature, or community provides the foundation to build potential cooperative effort. This dimension included items such as, “I have an increased sense of responsibility for the communities near the forest” and “It builds up connections between the forest and local communities” and “I have a better understanding of the biological processes in the forest”.

The second dimension, consensus building, was made up of members’ views on the process of identifying common interests and building consensus for action. Building consensus can produce joint learning, feasible actions, new relationships, relationships, and mutual understanding, which are believed to be important ingredients for fruitful collaboration (Innes, 1999). This dimension involves items such as, “I believe that

consensus based decision-making is the most effective way to arrive at natural resource decisions” and “I am committed to making collaborative planning efforts work with management”.

The next factor, influence and trust, corresponded to increased influence in natural resource decision-making as well as increased trust towards government agencies. Whether a collaborative body has significant decision-making power is an essential criterion to evaluate inclusion. For collaborative partnerships to be successful there must be trust among stakeholders. Trust helps maintain relationships and facilitates consensus, while distrust often resulted in conflict and opposition which can severely damage relationships. This factor included items such as, “I have increased trust that management will do what is right for the forest” and “I have more input on actions on resource management issues”.

The fourth factor, conflict resolution, was related to resolving natural resource controversies caused by multiple use constituencies. Constructive approaches to conflict are essential to effective collaboration. To be constructive, conflict cannot be avoided by confining discussion to technical issue; it must foster mutual understanding and civic dialogue (Daniel & Walker, 1996). Items such as, “It reduces recreation conflict among groups” and “I have a better understanding of the different forest user groups” fall under this category.

The last factor, project implementation, assessed the function of collaboration in facilitating the implementation of various forest projects. Collaboration should be evaluated as to whether the planned projects were properly carried out. Two reversely

coded items “It has increased litigation over management decisions” and “It limits the implementation of forest projects” belonged to this factor.

As indicated by the factor means, the respondents perceived moderate positive influences of collaboration on all the dimensions (in between 3.0 to 4.0). On the other hand, collaboration tended to have more effects on conflict resolving (3.78) and increasing community members’ shared responsibility (3.74) than facilitate project implementation (3.36) and increase trust over government agencies (3.54).

Modeling the Pattern of Group Participation

Results of Exploratory Factor Analysis (EFA). EFA is first employed to delineate underlying factors in the scales.

Motivation. The 20-item motivation scale was subjected to EFA. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett’s Test of Sphericity were 0.83 and 2840.6 ($p < 0.000$), indicating that the sample size in this study was adequate for an EFA and these data had inherent sufficient correlations to perform EFA (Kaiser, 1974). One item “Organized groups are not very effective in influencing environmental/outdoor recreation issues” was deleted due to low communality ($< .35$) and a low factor loading ($< .5$). As a result, a five-factor solution, which explained 71.9 % of the total variance, was identified based on a cutoff eigenvalue value of 1.0 or above (Table 11). Cronbach’s Alphas for the factors were: .86, .78, .84, .89, and .86.

The first factor was labeled as *Activism*, which focused on the motivation to preserve and improve recreation and environmental quality. Individual items such as, “I feel compassion toward environmental/outdoor recreation problems” and “If the group

achieves its goals, my life and my children's lives will benefit" were included in this factor. The results revealed that voluntary organizations provide venues for individuals to express values related to natural resource stewardship. The second factor *Social* related to the social benefits of group membership such as, "meeting new people" and "working with good leaders". This factor also included a strong interest in recreation as well. The third factor, *Learning*, referred to the opportunities that membership provides for individuals to learn new things such as outdoor skills and knowledge about plants and animals. The next factor, *Self Enhancement*, included motives to obtain satisfaction, personal growth and enhancement of self-esteem. This factor included items such as, "To feel I am doing something useful" and "It makes me feel positive to contribute". The final factor *Material* was related to a direct material benefit that accrues to the individuals such as, "Group membership will help me to succeed in my business or career", "I can participate in special events hosted by the organization", and "I can get member discounts".

TABLE 11 Results of Exploratory Factor Analysis for Membership Motivation

Factors	Mean	SD	Factor loading	Eigen-value	Cronbach's α
<i>Factor 1 Activism</i>				5.9	.86
MA1 Improves the environmental/outdoor recreation quality	4.0	.88	.80		
MA2 Helps sustain natural areas	3.9	.91	.81		
MA3 I feel compassion toward environmental/outdoor recreation problems	4.0	.92	.78		
MA4 Supports the group's effort to influence government action on environmental/outdoor recreation problems	4.0	1.1	.78		
MA5 If the group achieves its goals, my life and my children's lives will benefit	3.9	1.1	.80		
<i>Factor 2 Social</i>				3.5	.78
MS1 To meet new people	3.2	1.1	.71		
MS2 People I am close to encourage me to belong	2.8	1.2	.67		
MS3 The personal contacts I have made through this organization have been useful to me	3.1	1.1	.72		
MS4 Allows me to work with good leaders	3.2	1.1	.60		
MS5 To have fun in the outdoor environment	3.9	1.1	.76		
<i>Factor 3 Learning</i>				1.7	.84
ML1 I can learn about the natural environment	3.1	1.1	.87		
ML2 Obtain new knowledge through direct, hands-on experiences	3.5	1.0	.75		
ML3 I can learn about how to work effectively with others	2.8	1.1	.64		
<i>Factor 4 Self Enhancement</i>				1.4	.89
ME1 To feel I am doing something useful	3.5	1.2	.89		
ME2 It makes me feel positive to contribute	3.7	1.1	.80		
ME3 Feeling peace of mind	3.3	1.2	.85		
<i>Factor 5 Material</i>				1.2	.86
MM1 Group membership will help me to succeed in my business or career	2.1	1.1	.83		
MM2 I can get member discounts	2.3	1.1	.88		
MM3 I can participate in special events hosted by the organization	2.6	1.1	.84		

Enduring involvement. The EFA results for the enduring involvement scale are given in Table 12. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett’s Test of Sphericity were 0.92 and 3064.2 ($p < 0.000$), indicating an adequate sample size for an EFA. The analysis yielded a three-factor solution, which explained 79.4% of the total variance. Cronbach’s alphas were .92, .90, and .86.

The first factor, *Attraction*, consisted of items related to the importance of the organization and the pleasure derived through group membership. For instance, “This organization is very important to me” and “I really enjoy being a member of the group” were included in this factor. The *Centrality* dimension, on the other hand, referred to centrality of the group within the context of members’ overall lifestyle. The organization may be considered central if, “a lot of one’s life is organized around the group” or “most of one’s friends are in some way connected with the group”. Finally, *Self Expression* corresponded to the symbolic value individuals wish to convey to others through their group membership. Sample items included, “My group says a lot about who I am” and “When I participate in the group I can really be myself”.

Participation in voluntary association. As mentioned in the method section, group participation was measured by years of membership and frequency of attending group meetings last year. The two variables were transformed into ratio measures and factor analyzed (EFA) to determine their unidimensionality and internal consistency as a construct variable. Both items had factor loadings above .7 and the Cronbach Alpha was .74.

Table 12 Results of Exploratory Factor Analysis for Enduring Involvement

Factors	Mean	SD	Factor Loading	Eigen-value	Cronbach's Alpha
<i>Factor 1 Attraction</i>				7.36	.92
IA1 This organization is very important to me	4.0	.98	.83		
IA2 Engaging in the group is one of the most satisfying things that I do	3.5	1.1	.66		
IA3 This group interests me	4.0	.94	.83		
IA4 I really enjoy being a member of the group	4.15	.85	.70		
				1.16	.90
<i>Factor 2 Centrality</i>					
IC1 I find a lot of my life is organized around the group	2.9	1.1	.78		
IC2 Group participation have a central role in my life	2.9	1.1	.86		
IC3 I enjoy discussing my group with my friends	2.8	1.2	.81		
IC4 Most of my friends are in some way connected with the group	3.3	1.1	.69		
				1.0	.98
<i>Factor 3 Self Expression</i>					
IS1 My group says a lot about who I am	3.3	1.2	.59		
IS2 You can tell a lot about a person by seeing them in the group	3.5	1.0	.87		
IS3 When I participate in the group I can really be myself	3.6	.96	.65		
IS4 When I participate in the group other see me the way I want them to see me	3.4	.99	.75		

Testing the measurement models. Measurement models reveal the relationship between latent variables and observed variables (Bryne, 1998). Graphs and fit indices were employed in this section to illustrate results of testing the fit of measurement models.

Motivation. Figure 5 presents the first order measurement model for membership motivation. The path between error terms of “ma4” (Supports the group’s effort to influence government action on environmental/outdoor recreation problems) and “ma5” (If the group achieves its goals, my life and my children’s lives will benefit) was free for estimation. Since both items were measuring the group functions in resource stewardship, they might have shared similarity of meanings and correlate to each other. Adding this path in the measurement model has resulted in significant improvement of model fit. The χ^2 value decreased a value of 36 while gaining of one degree of freedom. The modification indices ($\chi^2/df=2.4$, RMSEA=.066, CFI=.923, NFI =.88, IFI =.924) revealed an acceptable model fit.

Enduring involvement. Figure 6 showed the first order measurement model for enduring involvement. The fit indices for the first-order model ($\chi^2/df=2.95$, RMSEA=.088, CFI=.951, NFI =.928, IFI =.951) suggested a satisfactory model fit for the enduring involvement scale. The modification indices suggested no need for further model specification.

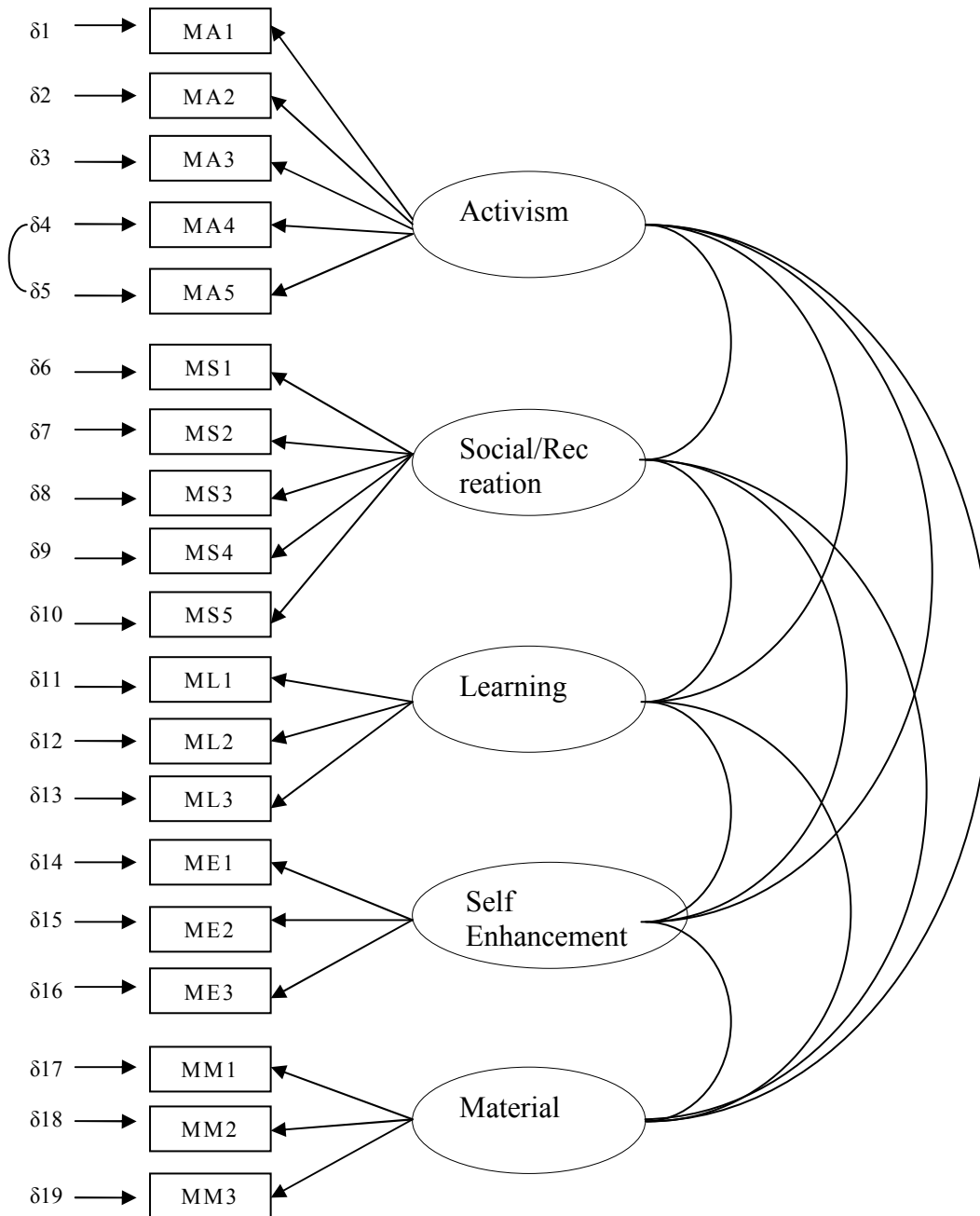


FIGURE 5 Measurement model of membership motivation.

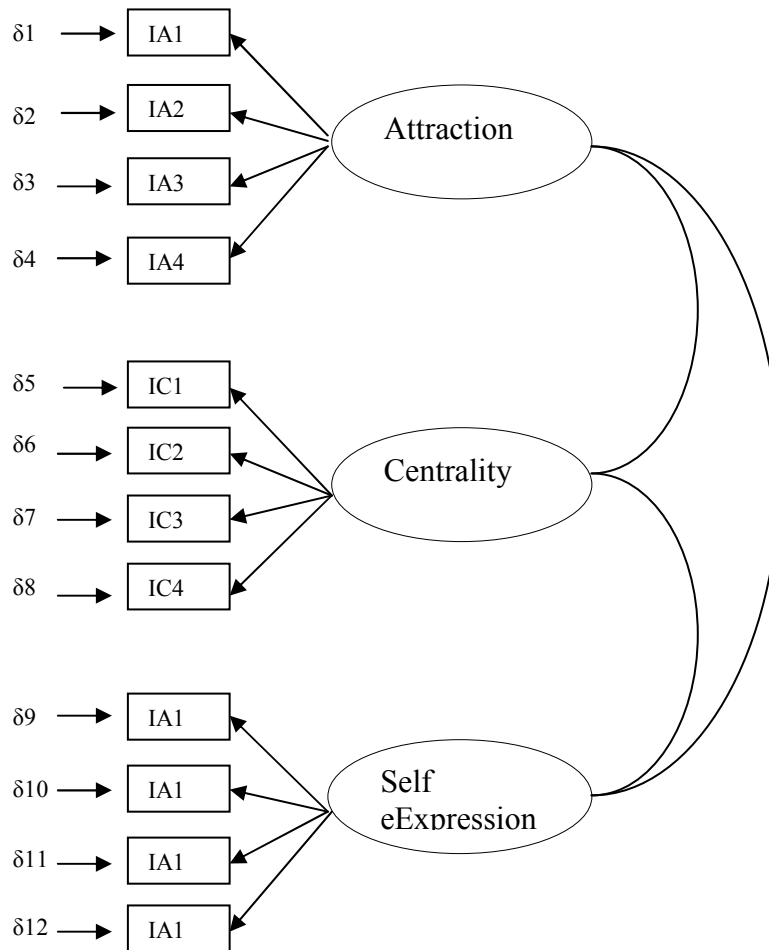


FIGURE 6 Measurement model of enduring involvement.

Validity and reliability of measurement models. The measurement models were also subjected to the assessment of validity and reliability.

Construct validity. Construct validity focuses on the extent to which data exhibit support of convergent validity and discriminant validity. Anderson and Gerbing (1988) suggested that evidence of convergent validity for a measurement model is present if all

observable indicators load significantly onto their respective latent factors. As can be seen in Tables 13 and 14, all observable indicators were significantly different from zero. Therefore, all items measured the constructs that they were designed to measure.

Discriminant validity. In contrast to convergent validity, discriminant validity was defined as a method that, “assesses the degree to which two measures designed to measure similar, but conceptually different constructs” (Netemeyer et al., 2003, p. 142). To establish discriminant validity, the solution was checked for discriminant validity between factors using the method proposed by Gerbing and Anderson (1988). The method involves checking bivariate correlations between all the factors of each measurement model to see whether 95% confidence intervals calculated as, “1.96 times standard error of estimate” contained the value of 1. The results showed that no confidence intervals included 1, which provided evidence for the scales’ discriminant validity.

Reliability. Scale reliability is the proportion of variance attributable to the true score of the latent variable (Devellis, 2003). Cronbach’s Alpha, Composite Reliability, and Average Variance Extracted were used to assess scale reliability. Cronbach’s Alphas of all the factors in all scales were larger than 0.7, which showed satisfactory reliability. According to Bagozzi and Kimmel (1995), a factor displays its reliability if its composite reliability is greater than .6. As displayed in Tables 13 and 14, all constructs met the minimal level of acceptable reliability. Furthermore, the Average Variance Extracted for all scales was greater than 0.5, which means that the variance due to measurement error is less than the variance captured by the construct. Therefore,

according to Fornell and Larcker (1981), the scales used in this study have satisfactory reliability.

Combining all aforementioned tests provided empirical support that the scales used in the measurement models were valid and reliable measures. Therefore, the relationships among constructs will be examined in the next step.

TABLE 13 Results of Confirmative Factory Analysis on Membership Motivation

Factors	Factor loading	Critical Ratio	P	Composite reliability	Average Variance Extracted
<i>Factor 1 Activism</i>				0.71	0.53
MA1 Improves the environmental/outdoor recreation quality	.74	11.9	***		
MA2 Helps sustain natural areas	.76	12.2	***		
MA3 I feel compassion toward environmental/outdoor recreation problems	.73	11.8	***		
MA4 Supports the group's effort to influence government action on environmental/outdoor recreation problems	.71	11.5	***		
MA5 If the group achieves its goals, my life and my children's lives will benefit	.70	----	----		
<i>Factor 2 Social/Recreation</i>				.60	0.42
MS1 To meet new people	.72	9.9	***		
MS2 People I am close to encourage me to belong	.60	8.9	***		
MS3 The personal contacts I have made through this organization have been useful to me	.64	8.6	***		
MS4 Allows me to work with good leaders	.62	9.2	***		
MS5 To have fun in the outdoor environment	.65	----	----		
<i>Factor 3 Learning</i>				.80	.56
ML1 I can learn about the natural environment	.76	11.5	***		

TABLE 13 Continued

Factors	Factor loading	Critical Ratio	P	Composite reliability	Average Variance Extracted
ML2 Obtain new knowledge through direct, hands-on experiences	.77	11.5	***		
ML3 I can learn about how to work effectively with others	.73	----	----		
<i>Factor 4 Enhancement</i>				.86	0.68
ME1 To feel I am doing something useful	.89	17.0	***		
ME2 It makes me feel positive to contribute	.79	17.0	***		
ME3 Feeling peace of mind	.76	----	----		
<i>Factor 5 Material</i>				.82	0.66
MM1 Group membership will help me to succeed in my business or career	.83	14.4	***		
MM2 I can get member discounts	.76	14.5	***		
MM3 I can participate in special events hosted by the organization	.85	----	----		
<i>Fit indices</i>					
$\chi^2(df) = 348.8(141)$, RMSEA=.068, CFI=.917, NFI=.87, IFI=.918					

TABLE 14 Results of Confirmative Factor Analysis on Enduring Involvement

Factors	Factor Loading	Critical Ratio	P	Composite reliability	Average Variance Extracted
<i>Factor 1 Attraction</i>				0.80	0.59
IA1 This organization is very important to me	.85	13.1	***		
IA2 Engaging in the group is one of the most satisfying things that I do	.68	16.8	***		
IA3 This group interests me	.85	12.8	***		
IA4 I really enjoy being a member of the group	.67	----	----		
<i>Factor 2 Centrality</i>					
IC1 I find a lot of my life is organized around the group	.82	16.2	***	0.75	0.62
IC2 Group participation have a central role in my life	.83	14.7	***		
IC3 I enjoy discussing my group with my friends	.76	12.8	***		
IC4 Most of my friends are in some way connected with the group	.72	----	----		
<i>Factor 3 Self-expression</i>				0.76	0.60
IS1 My group says a lot about who I am	.76	14.8	***		
IS2 You can tell a lot about a person by seeing them in the group	.75	13.8	***		
IS3 When I participate in the group I can really be myself	.80	14.1	***		
IS4 When I participate in the group other see me the way I want them to see me	.79	----	----		
<i>Fit statistics</i>					
χ^2 (df) =150.7(51), RMSEA=.088, CFI=.951, NFI =.928, IFI =.951					

Testing the structural model. The final phase of the analysis is to evaluate the structure models and test the predictive relationship of the latent construct. With this analysis, the research should test specific hypotheses and examine how well the hypothesized model fit these data.

Hypothesized model. Based on previous literature and the results from measurement model, the relations among the constructs are depicted in our hypothesized model (Figure 7). In this model, eighteen first-order hypotheses and three second-order hypotheses were hypothesized to examine the relationships among membership motivation, enduring involvement, and participation:

Hypothesis 1: A higher level of activism will contribute to a higher level of attraction and vice versa.

Hypothesis 2: A higher level of social/recreation will contribute to a higher level of attraction and vice versa.

Hypothesis 3: A higher level of learning will contribute to a higher level of attraction and vice versa.

Hypothesis 4: A higher level of self-enhancement will contribute to a higher level of attraction and vice versa.

Hypothesis 5: A higher level of material will contribute to a higher level of attraction and vice versa.

Hypothesis 6: A higher level of activism will contribute to a higher level of centrality and vice versa.

Hypothesis 7: A higher level of social/recreation will contribute to a higher level of centrality and vice versa.

Hypothesis 8: A higher level of learning will contribute to a higher level of centrality and vice versa.

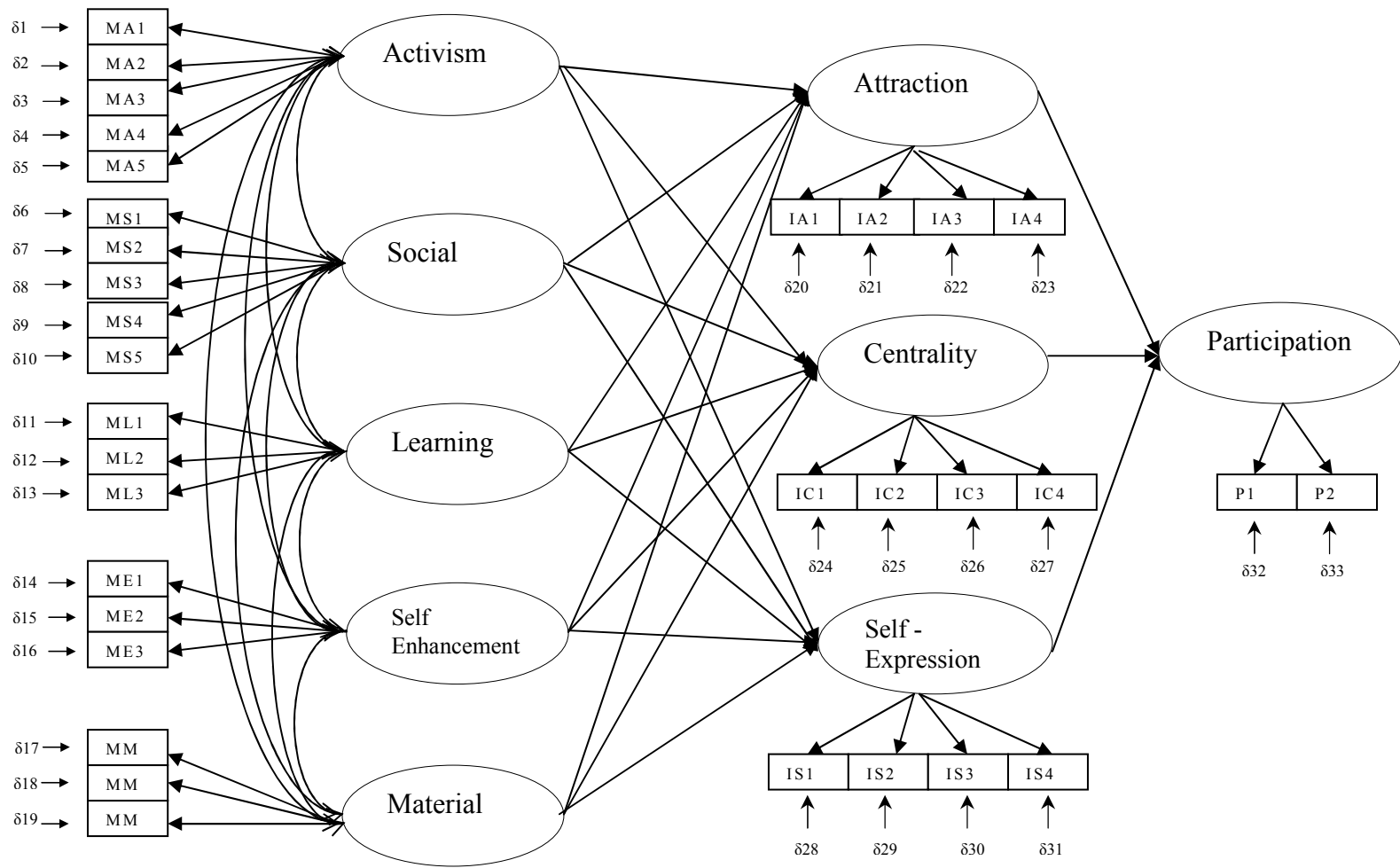


FIGURE 7 Structure model of participation in voluntary association.

Hypothesis 9: A higher level of self-enhancement will contribute to a higher level of centrality and vice versa.

Hypothesis 10: A higher level of material will contribute to a higher level of centrality and vice versa.

Hypothesis 11: A higher level of activism will contribute to a higher level of self-expression and vice versa.

Hypothesis 12: A higher level of social/recreation will contribute to a higher level of self-expression and vice versa.

Hypothesis 13: A higher level of learning will contribute to a higher level of self-expression and vice versa.

Hypothesis 14: A higher level of self-enhancement will contribute to a higher level of self-expression and vice versa.

Hypothesis 15: A higher level of material will contribute to a higher level of self-expression and vice versa.

Hypothesis 16: A higher level of attraction will contribute to a higher level of participation and vice versa.

Hypothesis 17: A higher level of centrality will contribute to a higher level of participation and vice versa.

Hypothesis 18: A higher level of self-expression will contribute to a higher level of participation and vice versa.

Hypothesis 19: A higher level of membership motivation will contribute to a higher level of enduring involvement and vice versa.

Hypothesis 20: A higher level of enduring involvement will contribute to a higher level of group participation and vice versa.

Hypothesis 21: Enduring involvement will mediate the relationship between membership motivation and group participation.

Model fit. A full structural model with all parameter estimates was computed using SEM. As shown in Figure 8, the overall fit of the full structural model was satisfactory based on the fit indices: $\chi^2(df=466) = 932.818$, RMSEA=.055, CFI=.914, NFI =.84, IFI =.915). The parameter estimates were examined to identify non-significant structural coefficients. Three of the hypothesized paths (i.e., Learning→Attraction, Material→Attraction, and Material→Self-expression) were trimmed from the model on the basis of non-significant t-values (Schumacker & Lomax, 1996). The modification indices were examined to identify model mis-specification, and no further model modification was considered to be appropriate. The structural coefficients were reported in Table 15 and shown in Figure 8. The results offered partial support for our hypothesized model.

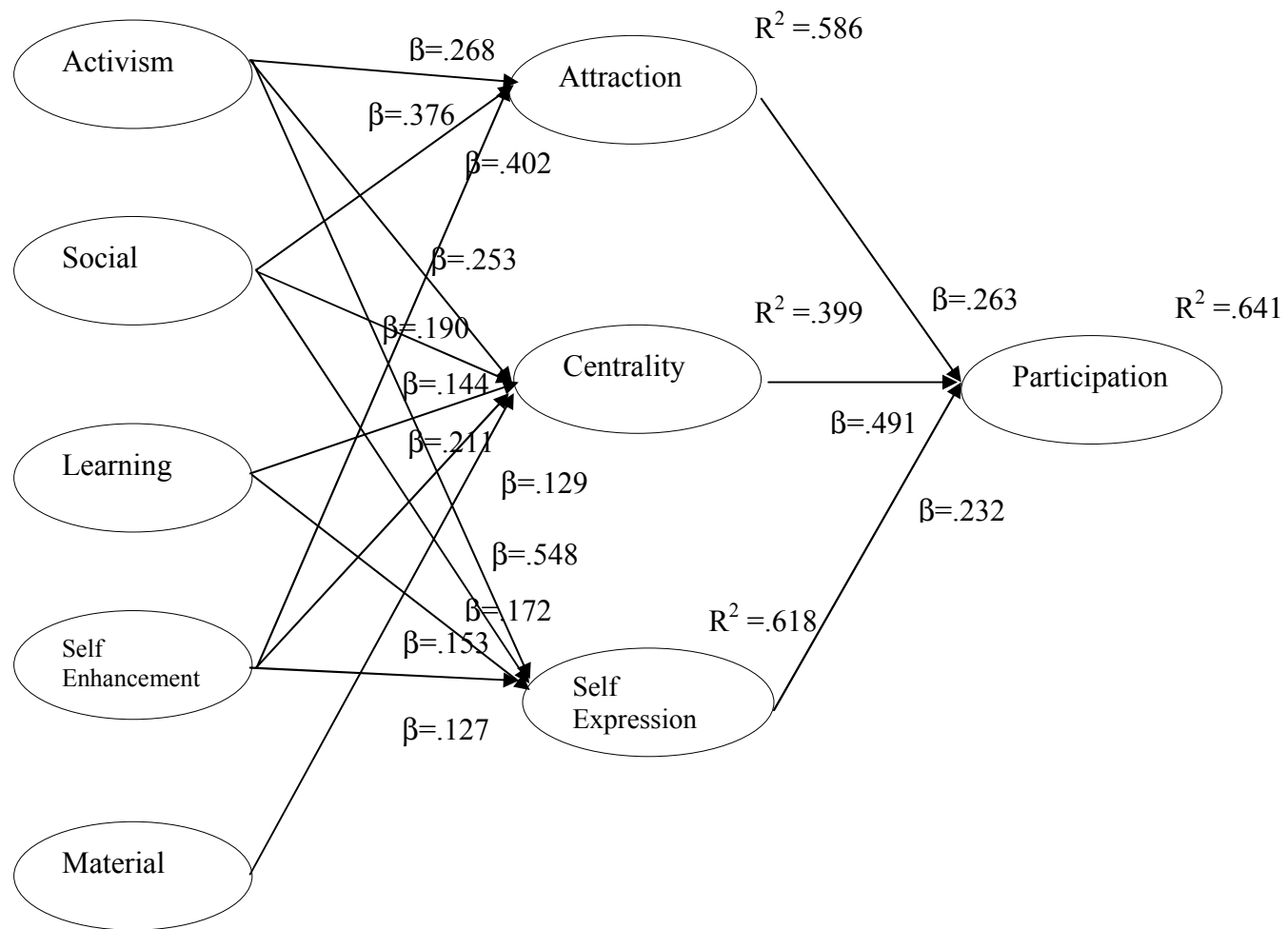


FIGURE 8 Model fit of participation in voluntary association.

TABLE 15 Summary of Direct Effects

Path	β	P	R^2
Activism→Attraction	.268	***	.586
Social→Attraction	.376	***	
Learning→Attraction	-.087	.155	
Enhancement→Attraction	.402	***	
Material→Attraction	-.013	.551	
Activism→Centrality	.253	***	.399
Social→Centrality	.190	.007	
Learning→Centrality	.144	.034	
Enhancement→Centrality	.211	.002	
Material→Centrality	.129	.024	
Activism→Expression	.548	***	.618
Social→Expression	.172	.007	
Learning→Expression	.153	.011	
Enhancement→Expression	.127	.048	
Material→Expression	.061	.222	
Attraction→EUH	.263	***	.641
Centrality →EUH	.491	***	
Expression→EUH	.232	***	

Model strength. We assessed the strength of the structural model using the squared multiple correlation coefficients (R^2) for each of the dependent variables (See Figure 8 and Table 15). Three motivation dimensions (*Activism*, *Social*, and *Self Enhancement*) accounted for 58.6% of the variation in *Attraction*. All motivation dimensions (*Activism*, *Social*, *Learning*, *Self Enhancement*, and *Material*) accounted for 39.9% of the variance in *Centrality*. All motivation dimensions except *Material* accounted for 61.8% of the variance in Self Expression. In addition, *Self Eexpression*, *Attraction*, and *Centrality* accounted for 64.1% of the variation in *Participation*.

It was found that *Self Enhancement* had the highest path coefficient for *Attraction*, indicating that *Self Enhancement* is the best motivation predictor of the *Attraction* dimension of enduring involvement. *Activism* had the highest path coefficients for *Centrality and Self Expression*, which means that *Activism* is the best motivation predictor of the *Centrality and Self Expression* dimensions of enduring involvement. Further, *Centrality* had the highest path coefficients for *Participation*, suggesting that *Centrality* is the best predictor of *Participation*.

Hypothesis testing. Table 15 depicts the predictive effects among latent variables. The following paragraphs will discuss results of hypothesis testing as well as providing interpretation of the nature of the relationship between the tested variables.

Hypothesis 1 examined the relationship between *Activism* and *Attraction*. It was hypothesized in the study that there would be a positive relationship between these two constructs. The Amos outputs revealed that *Activism* had a significant positive direct effects on *Attraction* ($\beta=.268$, $p=.000$). It means that for each unit increase of motivation for *Activism*, the corresponding increase of *Attraction* was .268. It showed that those who are more compassionate toward recreation and environmental problems, were more likely to perceive the group as important and derive pleasure through membership. Thus, hypothesis 1 was accepted.

Hypothesis 2 stated that a higher level of *Social* will contribute to a higher level of *Attraction* and vice versa. This relationship was supported by these data ($\beta=.376$, $p=.000$). According to the standardized coefficient, for each unit increase of *Social*, *Attraction* increases .376 units. The result indicates that respondents perceive the group

as more important and pleasant when they score higher on social benefits such as meeting new people and working with good leaders. Thus hypothesis 2 was supported.

Hypothesis 3 tested the relationship between *Learning* and *Attraction*. It was hypothesized that *Learning* would have a positive influence on *Attraction*. The result in the study found no significant relationship between the two constructs ($\beta = -.087$, $p = .155$). Therefore, the level of motivation for learning has no influence on respondents' perception of how interesting and important the group is. Thus, hypothesis 3 was rejected.

Hypothesis 4 stated that a higher level of *Self Enhancement* will contribute to a higher level of *Attraction* and vice versa. Consistent with this hypothesis, the result showed that *Attraction* could be explained by the motivation for *Self Enhancement* ($\beta = .402$, $p = .000$). For each unit increase of *Self Enhancement*, *Attraction* increases .402 units. The result indicate that respondents are more likely to perceive the group as more important and interesting when they have higher level of motivation for personal growth and enhancement of self-esteem. Thus hypothesis 4 was supported.

Hypothesis 5 focused on the relationship between *Material* and *Attraction*. It was hypothesized that *Material* would have a positive influence on *Attraction*. The AMOS output suggested that this was not the case ($\beta = -.013$, $p = .551$). This result means that importance of motivation for material benefits has no influence on respondents' perception of how interesting and important the group is. Therefore, hypothesis 5 was not supported.

Hypothesis 6 investigated the relationship between *Activism* and *Centrality*. It was hypothesized in the study that there would be a positive relationship between these two constructs. The results revealed that, as hypothesized, *Activism* had a significant positive direct effect on *Centrality* ($\beta=.253$, $p=.000$). According to the standardized coefficient, for each unit increase of motivation for *Activism*, the corresponding increase of *Centrality* was .253. It shows that those who are more compassionate toward recreation and environmental problems, are more likely to center their overall lifestyle on group activities. Thus, hypothesis 6 was accepted.

Hypothesis 7 examined the interaction between *Social* and *Centrality*. It was hypothesized that a higher level of *Social* will contribute to a higher level of *Centrality* and vice versa. This relationship was supported by these data ($\beta=.190$, $p=.007$). Quantitatively for each unit increase of motivation for *Social/Recreation*, respondents' perception of *Centrality* increases .190 units. This result shows that respondents are more likely to feel group participation has a central role in their lives when they have a stronger motivation for social and recreational benefits. Thus, hypothesis 7 was supported.

Hypothesis 8 tested the relationship between *Learning* and *Centrality*. In particular, *Learning* was expected to have a positive influence on *Centrality*. The results supported this hypothesis ($\beta=.144$, $p=.034$), which implies that those who have a stronger desire to learn new things by joining the group are more likely to organize their lives around the group. The standard path coefficient means that for each unit increase of *Learning*, *Centrality* increases .144 units. Therefore, hypothesis 8 was supported.

Hypothesis 9 examined the influence that *Self Enhancement* had on *Centrality*. It was hypothesized that *Centrality* would be positively related to *Self Enhancement*, suggesting that the stronger motivation people have for satisfaction from enhanced self-esteem, the more likely people would organize their lives around the group. The results of the study supported the hypothesis ($\beta=.211$, $p=.002$). When there is a unit increase in *Self Enhancement*, *Centrality* increases .211 units. Thus, hypothesis 9 was supported.

Hypothesis 10 stated that a higher level of *Material* will contribute to a higher level of *Centrality* and vice versa. Results revealed that *Material* is a significant positive predictor of *Centrality* ($\beta=.129$, $p=.024$). Therefore, members are more likely to organize their lives around the group when they join for material benefits such as membership discount and access to special events. The standardized coefficient information implies that *Centrality* increases .129 units when there is a unit increase in *Material*. Thus, hypothesis 10 was accepted.

Hypothesis 11 examined the interaction between *Activism* and *Self Expression*. It was hypothesized that a higher level of *Activism* will contribute to a higher level of centrality and vice versa. This relationship was supported by these data ($\beta=.548$, $p=.000$). In other words, members are more likely to identify with their group when they have a higher level of motivation for recreation and environmental activism. When there is a unit increase in *Activism*, *Self Expression* increases .211 units. Therefore, hypothesis 11 was supported.

Hypothesis 12 tested the relationship between *Social* and *Self Expression*. In particular, *Social* was expected to have a positive influence on *Self Expression*. The

results supported this hypothesis ($\beta=.172$, $p=.007$), which implies that those who have a stronger desire to obtain social and recreation opportunities by joining the group are more likely to identify with the group. The standardized path coefficient means that for each unit increase of *Social*, *Self Expression* increases .172 units. Therefore, hypothesis 12 was supported.

Hypothesis 13 stated that a higher level of *Learning* will contribute to a higher level of *Self Expression* and vice versa. This relationship was supported by these data ($\beta=.153$, $p=.001$). According to the standardized coefficient, for each unit increase of *Learning*, *Self Expression* increases .376 units. The result indicates that respondents have a stronger identification with the organization when they are highly motivated for learning opportunities with membership. Thus hypothesis 13 was supported.

Hypothesis 14 stated that a higher level of *Self Enhancement* will contribute to a higher level of *Self Expression* and vice versa. Results showed that *Self Expression* was positively influenced by *Self Enhancement* ($\beta=.127$, $p=.048$). Therefore, members tend to have higher group identification when they join to feel good about themselves. The standardized coefficient information showed that *Self Expression* increases .127 units when there is a unit increase in *Self Enhancement*. Thus, hypothesis 14 was accepted.

Hypothesis 15 stated that *Material* would have a positive influence on *Self Expression*. The AMOS output showed no significant relationship between the two constructs ($\beta=.061$, $p=.222$). This means that perceived importance of motivation for material benefits has no influence on respondents' perception of self expression through group membership. Thus, hypothesis 15 was not supported.

Hypothesis 16 investigated the relationship between *Attraction* and *Participation*. It was hypothesized in the study that there would be a positive relationship between these two constructs. The results revealed that, as hypothesized, *Attraction* had a significant positive effects on *Participation* ($\beta=.263$, $p=.000$). According to the standardized coefficient, for each unit increase of *Attraction*, the corresponding increase of *Participation* was .263 units. This finding showed that those who view their group as interesting and important are more likely to participate in group activities. Therefore, hypothesis 16 was accepted.

Hypothesis 17 stated that a higher level of *Centrality* will contribute to a higher level of *Participation* and vice versa. Results showed that *Participation* was positively influenced by *Centrality* ($\beta=.491$, $p=.000$). Therefore, members are more active in group participation when the group has a central role in their overall lifestyle. The standardized coefficient information implies that *Participation* increases .491 units when there is a unit increase in *Material*. Thus, hypothesis 17 was accepted.

Hypothesis 18 tested the relationship between *Self Expression* and *Participation*. In particular, *Self Expression* was expected to have a positive influence on *Participation*. The results supported this hypothesis ($\beta=.232$, $p=.000$), which implies that those who are more identified with their group are more likely to participate in the group. The standard path coefficient means that for each unit increase of *Self Expression* corresponding increase of *Participation* is .232 units. Therefore, hypothesis 18 was supported.

Hypothesis 19 was concerned with the second order relationship between motivation and enduring involvement. Motivation was expected to have a positive

influence on enduring involvement. This hypothesis was supported based on the results of hypothesis testing (H1-15).

Hypothesis 20 stated that a higher level of enduring involvement will contribute to a higher level of group participation and vice versa. Results of hypothesis testing (H16-18) revealed that enduring involvement was a significant positive predictor of participation.

Hypothesis 21 stated that enduring involvement will mediate the relationship between membership motivation and group participation. All the indirect effects are reported in Table 16. Significant positive indirect effects were found from activism, social and enhancement to EUH ($\beta=.322, p=.001$; $\beta=.232, p=.001$; $\beta=.238, p=.002$). The results indicated when activism, social and enhancement motivations were high, members perceived a higher level of enduring involvement, which leads to higher level of group participation. These results provided support of enduring involvement as a mediator in a path from motivation to participation (H21).

In summary, the proceeding hypothesis testing illustrated the statistically significant effects among motivation, enduring involvement, and participation. These findings supported that: (1) motivation and enduring involvement are significant positive predictors of participation and (2) enduring involvement mediate the relationship between motivation and participation.

TABLE 16 Summary of Indirect Effects

Path	Indirect	<i>SE</i>	<i>P</i>
Enhancement→EUH	.238	.062	.002
Learning→EUH	.084	.058	.153
Social→EUH	.232	.062	.001
Activism→EUH	.322	.057	.001
Material →EUH	.070	.043	.095

CHAPTER V

DISCUSSION AND CONCLUSION

This dissertation was aimed at gaining a better understanding of voluntary associations and their involvement in natural resource management. Five objectives guided this study: (1) assessing the organizational characteristics of voluntary associations; (2) exploring organizational concerns about forest management issues; (3) examining organizational leaders' experiences in collaborating with the Forest Service; (4) evaluating members' perceptions of collaboration outcomes, and (5) developing and testing a social psychological model to predict members' participation in voluntary associations. This study incorporated both qualitative and quantitative methodologies. The findings reflected input from 22 key informants and 335 general members in selected voluntary associations in the Houston region. The results reflected the local perceptions, attitudes, and actions in relation to stakeholder involvement in forest management. This chapter first synthesizes and discusses the findings of this study. Next, theoretical and managerial implications are offered based on the findings. Finally, limitations of this study are discussed and suggestions for future directions are provided.

Discussion of Findings

Organizational Characteristics of Voluntary Associations

The results of this study provide a window into the attributes of voluntary associations as natural resource stakeholders. The findings illustrate that a variety of voluntary associations are actively involved in forest planning and management. The

majority of the study groups have been formed in Texas since the 1990s and a considerable portion of members joined the group within the last five years. These data suggest a growing trend of grass-root recreation organizations forming for the purpose of enhancing recreation and environmental quality. This result is consistent with some of the research in recreation natural resource management (Nerbonne & Nelson, 2004; Savage, Isham, & Klyza, 2005). These findings also support Weber's (2000) claim regarding the emergence of place-based grass-roots ecosystem management efforts across the United States in the late 1980s and early 1990s as a new environmental movement.

The growth of voluntary associations may be due to a mixture of circumstances. It could be attributed to the shrinking natural resource base and increased environmental degradation. It could also be due to increased competition of views and principles as to how natural resources should be managed between government agencies and the wider community. It may also reflect the realization that the conventional approaches used in the past have failed to deliver (Buchy & Hoverman, 2000). Although, this study did not attempt to assess this possible trend, it may be important for future investigation.

This study illustrates that the missions of selected voluntary associations can be summarized into three areas: (1) promotion of recreation activities through stewardship activities; (2) public education and communication on recreation and conservation, and (3) partnerships with public officials and other organizations to influence recreation resource decision-making. The reported group activities correspond to their stated missions. It shows that local groups have the potential of not only providing recreation

opportunities to members in local communities but also building forest community connections (Arnold & Fernandez-Gimenez, 2008). Savage, Isham, and Klyza (2005) also pointed out that local recreation groups have played an increasingly important role in environmental monitoring, wildlife identification, the purchase of land, and conservation easements.

Changes in organizational goals, activities, and membership overtime were reported. These findings are consistent with some of the descriptions on grass-roots organizations nationally (Weber, 2000). For example, it was found that grass-root organizations tend to have more flexibility in redefining association goals to respond proactively to significant sociopolitical and environmental changes (Weber, 2000). Some studies have also shown that recreation associations have changed to be more instrumentally involved with natural resource issues (Faich & Gale, 1971). Rogers, Burge, Korsching and Donnermeyer (1988) revealed that local voluntary groups have the tendency to evolve from focusing on immediate issues to broader and long-term goals.

The results on the membership profiles were similar to those from previous volunteerism research (Smith, 1994; Wilson & Musick, 1998). For example, group members reported a greater proportion of males, higher levels of education, a greater proportion of white ethnicity, and older age than the general population. These differences are consistent with the dominant-status model in volunteer research. Also, more than 50% of the respondents have been a member for less than five years, and around 80% of the total respondents reported some participation in group activities over

the last 12 month. This finding indicates an overall pattern of newer and participative membership composition in recreation and environmental voluntary associations.

Organizational Concerns about Forest Management Issues

The in-depth interviews revealed five key issues within the problem domain, including: (1) the need for more recreation access; (2) financial challenge for recreation management; (3) recreation conflict among user groups; (4) inadequate communication with the general public, and (5) sustainability of the forest.

The demand for access in national forests might be explained by at least two factors. Recent studies have suggested substantial population gains and composition change in national forest counties that are categorized as metropolitan (Radeloff et al., 2004). Schuett, Lu, Fannin, and Bowser (2007) reported increased housing density near national forests in East Texas. Urban sprawl from Houston to the surrounding counties may generate more potential visitors to national forests. Although little visitor data were collected at the forest level, conversations with the district ranger, local staff, and key informants suggested an increased trend of recreation use overtime. On the other hand, increased recreation access may benefit the organizations in several ways such as attracting more members through providing more races and events, facilitating large scale events planning, and encouraging more participation in outdoor activities.

Findings from this study showed that financial support played a crucial role in forest management since sufficient funding promotes personnel and project development. Unfortunately, due to declined resource budgets in the Forest Service and a possible lack of prioritization (Brown, Squirrell, & Harris, 2010), a number of respondents felt that

recreation at the SHNF is not well managed. Without funding for projects, it is difficult to maintain enthusiasm and active involvement of voluntary associations in public land management. This finding re-emphasized the need for the Forest Service to adopt a more “entrepreneurial approach” and to explore the opportunity of partnerships in order to improve recreation management (Selin & Chavez, 1993).

Conflict emerged as another core category of forest management issues. This tension was found to be much more prevalent between non-motorized and motorized groups. Past studies have suggested that goal interference, social values, and contextual differences capture the main sources for conflict (Hunt et al., 2009). In this study, we found evidence of all of these types of conflicts. For example, hikers were concerned that ATV use on hiking trails interferes with their desired recreation experience. SCH members were also concerned with the unacceptable natural resource damage caused along the OHV trails. Other stakeholders noted that differences in context (e.g., resource allocation, fairness of management decisions) were the primary drivers for perceived conflict. These findings suggest that common-pool resource theory may be applied to the issue of non-consumptive use in national forests. From the recreation use perspective, national forests are used by multiple-users and/or multiple-user groups. Thus, resource subtraction takes place as different recreation activities interfere with one another causing degradation of resource and decreasing of recreation experience quality. Also, the exclusion of recreation users from access and use of national forest is difficult. These two characteristics of common-pool resources make their management difficult in a sustainable manner. The conventional theory suggests the only solutions are to manage

resources as private or public property (Hardin, 1968). However, the conventional theory presumed that users are alienated from each other or cannot communicate effectively, or have no way of gaining trust through creating and sustaining agreements to avoid over appropriation (Baland & Platteau, 1996). More recently, empirical studies have shown that community-based conservation is effective in resolving conflicts and achieving long term sustainability (Ostrom, 2005).

An overwhelming number of interviewees viewed the communication with the general public among the most critical issues facing the SHNF. We found that respondents have experienced difficulties acquiring information such as maps and organizational information from the Forest Service. Organizational leaders also suggested that the Forest Service does not respond to public comments promptly. Further, there is a concern about the lack of marketing efforts to promote recreation opportunities in the SHNF. This result reflects findings elsewhere in the U.S. on the role of effective communication for engaging the public in meaningful dialogue, educating public about forest-related knowledge, and attracting potential users through appropriate media (Piatek & McGill, 2010).

Sustainability of the national forest was identified as another key issue in this study. This finding suggests that respondents are well aware of the potential of outdoor recreation to destroy common natural resources through overuse and poor management practices. Most organizations are involved in forest stewardship and sustainability enhancement through providing on-the-ground volunteer services, such as trail maintenance, soil erosion monitoring, and garbage pick-up. The results suggest that

members are very proud of organizations' collective achievements in improving and maintaining sustainability of the recreational trail system. Therefore, sustainability of forest resource can be seen as a shared interest among involved stakeholders.

Organizational Leaders' Experiences in Collaborating with the Forest Service

By applying collaboration theory to this case study, we found a set of factors which may motivate organizations to involve themselves in inter-organizational collaborative activities. Resource sharing was identified as an important motivating condition influencing inter-organizational collaboration. This finding supported the theoretical argument that resource scarcity, "forces organizations to enter into more cooperative activities with other organizations" (Aiken & Hage, 1968, p. 394). Jamal and Getz (1995) also suggested that the interdependencies among organizations play an important role in collaborative activities. This study observed that strong leadership in a government agency can pull organizations in the direction toward collaboration. This finding recognizes the role organizational decision-makers can have as a mediator of organizational behaviors. In other words, inter-organizational collaboration can be viewed as an outcome of decision-makers' judgment of collaboration as a preferred strategy.

The third motivation factor of inter-organizational collaboration is the perception that a collaborative approach is inclusive and involves diverse stakeholders. Natural resource decision-making focuses on the breadth of perceptions and values, not just a single value preference. This result offered support of the importance of ideological

forces and normative values in influencing organizational behaviors (Schermerhorn, 1975).

Past literature tends to focus on motivating conditions of collaboration. The potential barriers of collaboration were often underestimated. Consistent with research in the past (Margerum, 2001; Steelman & Carmin, 2002), the results suggest that a set of constraints associated with inter-organizational collaboration exists and needs to be considered in the collaboration process. In particular, it was found that collaboration requires considerable investment in resources (e.g., people's time and communication activities). This provides evidence of Schermerhorn's (1975, p.850) statement that, "organizational participation in inter-organizational cooperation may involve costs by requiring the direct expenditure of scarce organizational resources." Therefore, although all stakeholders have a right to become involved, they must also have the resources and capacity in order to participate. The findings indicate that the potential constraints for collaborative activities increase when individual organization loses decision-making autonomy. Collaboration has been referred as a commitment for joint decision (Gray, 1989). Thus, it may place limits on each organizations' power over the domain. Further, the results suggest that the bureaucratic nature of a decision authority (e.g., Forest Service) can diminish collaboration efficiency in the face of increasing environmental complexity and turbulence. Therefore, reduced efficiency appears to be another potential constraint of inter-organizational collaboration.

In sum, according to the results of collaborative activities currently being practiced by the Forest Service at the SHNF, it is encouraging to see that under the leadership of

the new district ranger, a trails coalition was formed not only to provide a platform for trail users to express their views about forest management but also to pool resources together for improving recreation opportunities. In the mean time, we still see potential costs or barriers to collaborative planning being reported by study participants. Similar barriers were identified a decade ago (Carr et al., 1998; Wondolleck & Yaffee, 2000). This finding reflects the urgent need for organizational adjustment in the Forest Service in order to foster collaboration efforts with stakeholders. This result clearly shows that collaborative processes must be designed to enhance two-way communication, maximize citizen input, and limit the time commitment of participants.

Members' Perceptions of Collaboration Outcomes

Much of the literature on collaboration assumes positive outcomes of stakeholder participation, with little validation from empirical studies. This study developed a multi-dimensional evaluation framework and validated the hypothesized statement. A list of indicators was identified of what voluntary associations perceive they are accomplishing. Moreover, the results highlight the importance of multiple dimensional measures in collaboration evaluation. The measurement framework used in this study included a combination of performance goals (tangible indicators of forest conditions) and achievement goals (intangible indicators of stakeholder potentials).

The results on performance goals revealed that collaborative efforts enhance the ecological sustainability of the forest: "To provide better access, facilities, and services for outdoor recreation", and "To maintain the scenic beauty of national forests" were perceived to be effective ($M > 4.0$). Most other indicators received moderate scores

(3.0<M<4.0) except for “To provide more timber products and materials for local industries and communities” (M<3.0), which showed that the perceived accomplishments match well with the stated goals of selected voluntary groups. It also indirectly confirms the social trend of changing values and attitudes of Texans toward public forests. Traditionally, the public has placed high values on forest economic values such as timber, and resource extraction (Manning et al., 1999; Tarrant & Hull, 2004). Over the past few decades, the public has been increasingly supportive of noneconomic values such as aesthetic values, environmental quality values, ecological values, recreation, and tourism (Xu & Bengston, 1997).

In the analysis of achievement goals (stakeholder potentials), five criteria themes emerged from EFA: (1) shared responsibility; (2) consensus-building; (3) power influence and trust building; (4) conflict resolution, and (5) project implementation. These criteria themes share important traits with collaborative learning approach in communication theory (Daniels & Walker, 2001; Walker, Senecah, & Daniels, 2006). For example, collaborative learning encourages conflict resolution through mutual learning and open communication. It incorporates meaningful dialogue between diverse stakeholders to improve understanding of the specific problem situation and subsequently increases respect and trust among participants (Webler, Kastenholtz & Renn, 1995). Collaborative learning is also consensus-oriented and emphasizes joint decision making in which power is redistributed, and stakeholders take shared responsibility for the future outcomes of actions (Graham, 2004). The collaborative learning approach is said to improve project implementation by resolving conflicts

during the planning process and reduce the probability of appeals and litigation of forest policies (Moote, McClaran, & Chickering, 1997). A general overview of the factor means for achievement goals would suggest that if one were to define effectiveness in terms of being above the midpoint on five-point Likert scales, the collaboration between the Forest Service and the study groups could be judged as relatively effective in meeting the outcome criteria. Therefore, this finding confirms the statement that public involvement in resource management decisions is generating positive outputs. Evidence of similar achievement has also been reported elsewhere (Beierle, 1999; Cullen, et al., 2010; Leach, 2006; Wondolleck & Yaffee, 2000).

When comparing evaluation scores across factors, it was found that respondents scored relatively higher on the outcomes of resolving conflict, fostering shared responsibility, and consensus building. This finding highlights the ability of collaborative planning in adapting to complex and controversy social and institutional environments. Respondents responded less enthusiastically on trust and influence and project implementation dimensions, which tend to be medium term or long-term outcomes.

To sum up, the findings of collaboration monitoring stress that collaborative forest management is a phenomenon related not only to forest policy-making, but to a more broad philosophical discussion about citizen participation in a democratic society. The overall message is that collaborative efforts are looked upon favorably by members in recreation related voluntary associations and viewed to improve stakeholder capacity for achieving more accomplishments in the future.

Modeling Participation in Voluntary Associations

Committed volunteers are the foundation of successful collaborative resource management. Shifting from inter-organizational relationship to individual-group relationship, this study attempted to examine potential predictors of members' participation in voluntary associations. The findings provided a psychometrically valid and reliable scale capable of measuring five unique dimensions of motivation as well as three dimensions of enduring involvement. The findings of this study illustrated the relationships among individual motivation, enduring involvement with an organization, and participation in organizational activities. The remainder of this section discusses important contributions of this investigation.

Motivation for joining. Factor analysis of motivation items revealed that five factors—activism, social, learning, enhancement, and material—could explain 71.9% of the variance in motivation for joining voluntary associations. This result supported Olson (1965)'s idea that individuals joined in voluntary organizations not solely because they believed in the goals of those organizations. He argued that providing only collective goods will lead to suboptimal participation because it is in individual's economic self-interest not to participate. Olson called this phenomenon the free-rider problem and one solution to this problem was to provide selective incentives such as individual benefits. Similar to Olson, several theorists have considered two basic motivations for volunteering: to satisfy self-regarding interests and to satisfy other-regarding or altruistic interests (Clary et al., 1998; Dennis & Zube, 1988). More recently, other scholars developed an inventory of volunteer motivations to reflect multiple

motivations (i.e., enhancing self-esteem, helping others, furthering one's career, meeting new people, learning new knowledge, relieving guilt, avoiding boredom, fulfilling religious duties) of volunteer that can be grouped into multiple dimensions (Clary et al., 1992; Omoto & Snyder, 1995).

Clark and Wilson (1961) proposed a three-category classification of volunteer motivation which includes purposive benefits (benefits derived from the goals of the organization), solidary benefits (social rewards of group membership), and material benefits (rewards that are associated with a monetary value). Compared to Clark and Wilson's model, this study suggests that solidary benefits can be expanded into three different categories, namely the learning benefits (opportunities to learn new things from group interaction), social interaction (interpersonal relationships gained from group membership), and self enhancement (rewards associated with personal growth and enhancement of self-esteem).

Results showed that for this sample, the most important motivation for joining the organization is activism. Activism provides rewards derived from the goals of the organization, and members receive these rewards when they strive to reach these goals through their participation in the organization (e.g., makes the forest a better place for recreation). This finding also supports Knoke's (1988) and Omoto and Snyder's (1992) observations that normative benefits and achieving the goals of the organization are the primary reasons people engage in voluntary associations.

Enduring involvement. Enduring involvement has been used for explaining personal relevance and personal meaning of engagement in both consumer and leisure

behavior (McIntyre 1989; Schuett, 1993). As its name implies, enduring involvement is aroused by ongoing events and reflects longer term attachments to an object (Havitz & Mannell, 2005). The findings of this study were consistent with previous research showing that enduring involvement is multidimensional (Havitz & Howard, 1995; Jang, Lee, Park, & Stokowski, 2000; Kyle, et al., 2004). Although disagreement exists as to the factor structure of enduring involvement, the analyses provided good support for the involvement scale developed by McIntyre and Pigram (1992). Their scale conceptualizes enduring involvement as consisting of attraction (i.e., interest and importance), centrality to lifestyle; and self-expression. Past literature has focused on studying involvement with products, brands or leisure activities. This study showed that the psychological construct of enduring involvement is conceptually and empirically valid for understanding personal relevance with an organization, as evidenced in the satisfactory results of factor loadings, internal consistency and construct validity.

Since enduring involvement is multidimensional, the underlying meanings of each component might vary for different people. This study showed that the attraction component, relates to the importance of the organization and the pleasure derived through group membership, is the main force that drives the members to get psychologically involved in an organization. This finding was consistent with several earlier studies. In examining enduring involvement of gambling, Jang et al. (2000) observed that the most important personal meanings of casino gambling were pleasure and importance accruing to individuals. Havitz and Howard (1995) investigated the enduring nature of involvement with three recreational activities (golf, downhill skiing,

windsurfing) in different seasons. Attraction scored the highest of all involvement dimensions and remained stable between seasons. Therefore, a combination of the perceived importance of an organization to a particular individual and the hedonic value derived from the group tends to have more influence on an individuals' involvement profile.

Motivation → Involvement. SEM results supported the assumption that motivation is an antecedent of enduring involvement. Thus, this finding provides empirical support of the theoretical connection between motivation and enduring involvement, which is consistent with several existing studies. For example, Iwasaki and Havitz (2004) suggested that motivation is a positive predictor of enduring involvement among a sample drawn from Canadian recreation centers. Kyle et al. (2006) found that the effect of motivation on involvement was positive. Funk, Ridinger, and Moorman (2004) examined the origins of enduring involvement in a sport spectator setting. Their results confirmed motivation as an antecedent of involvement. Therefore, we can see that people join voluntary associations initially with the expectation of receiving specific benefits. Overtime, they become devoted to those organizations that are most congruent with their personal needs, goals and values. This finding also highlights the enduring properties of enduring involvement rather than a situational feeling or state.

The relationships among the first order dimensions of motivation and enduring involvement also provide insights on how attributes associated with an organization support recreationists' enduring involvement in the organization. Origins of attraction were observed to stem from motivation for activism, social, and learning, indicating that

joining for achieving collective goods, for social interaction and for learning new things can reinforce the organization's importance and pleasure to members. Each dimension of motivation positively influenced centrality. This relationship represents the positive role of motivation in enhancing the centrality of the organization in an individual's lifestyle. Self expression was positively influenced by all motivation factors except material. The results indicate that material rewards through group membership have little impact on fostering symbolic meanings that people attach to their organization.

The results showed that motivation accounted for the greatest percentage of the variance in the self expression dimension of enduring involvement. In other words, highly motivated individuals will express a higher level of group involvement that characterizes the individual as a member and becomes part of the self-concept. This was also found true in Kyle et al.'s (2006) study on campers. As self-expression refers to the impression of the self that individuals wish to convey to others through their participation in the organization, this finding implies that members' engagement in recreation related voluntary associations is tied to the collective image and identity fostered by the association. The material dimension was only a weak predictor of involvement (only has significant effect on centrality). This suggests that perceived material benefits such as membership discounts have limited influence on members' enduring association with an organization.

Involvement → Participation. The results of structural modeling showed that all involvement dimensions have direct and positive effects on group participation. These relationships suggest that respondents' participation in group activities increase along

with: (1) the level of importance and pleasure that respondents derived through group engagement; (2) the centrality of the group within the context of their overall life, and (3) the self-representation value they derived from organization. The finding supported the statement that involvement is a powerful explanatory variable for behavioral outcomes (Iwasaki & Havitz, 2004; Zabriskie & McCormick, 2003).

In this study, the dimension of centrality in enduring involvement accounted for the greatest percentage of the variance in participation. This would imply that perceived centrality of the group within the context of member's overall lifestyle played the most important role in influencing his/her participation in group. The literature assessing the predictive strength of involvement dimensions on behavior is still limited and lacking any unified conclusion. Jang et al. (2000) reported that centrality facet of enduring involvement was the most important predictor of people's engagement in gambling. Kyle and Mowen (2005) posited that commitment to public leisure service provider was best predicted by the attraction dimension of involvement. Lee and Scott (2009) supported that attraction was a stronger predictor of participation in celebrity fandom behavior than centrality and self-expression. In a study of forest recreation users, Kyle et al. (2004) found that both attraction and self expression dimensions were significant predictors of place attachment dimensions. Therefore, it can be suggested that the influences of involvement dimensions on attitude and behavior outcomes differ by activity setting.

Motivation → Involvement → Participation. Previous investigations on the relationship among motivation, enduring involvement, and participation have focused on

unorganized recreation activities or consumer products. In this study, these constructs have been applied to the context of voluntary associations. Overall, the findings of model testing support the contention that motivation and enduring involvement are significant antecedents of participation in voluntary associations. Further, enduring involvement mediates the path from motivation to participation. Based on multidimensional conceptualization of each construct, the results illustrate that the relationships among each of the dimensions was not uniform. Not all effects were significant nor were they of equal valence. Therefore, these data offered partial support of our model.

Theoretical Implications

The results derived from this study have generated several significant theoretical revelations that will help guide future research on stakeholder involvement. In the following section, we will summarize the theoretical contributions of this research in detail.

Non-profit Sector Research

Recreation-related voluntary organizations have been generally neglected by mainstream nonprofit sector scholars. In the absence of broad inventory surveys, community-based case studies have been used as an effective approach in understanding voluntary grassroots initiatives (Smith, 2000). The prevailing theories of the nonprofit sector suggest that failures of markets and governments are the main justification of nonprofit services (Hansmann, 1987; Salamon, 1987). Based on the findings from this dissertation, we argue that noneconomic aspects such as civic activism and social capital

are crucially important to the growth of recreation and environmental voluntary association in the last decades. Overall, the study associations can be described as place-based, small to moderate scale, activity-oriented, and participative groups that are more adaptive to significant sociopolitical and environmental change.

Although research on grass-roots organizations can be traced back to the 1980s, there is limited research in monitoring the importance and contributions of grass-roots organizations. This study demonstrated that recreation associations have provided a variety of benefits to individual members and the broader society. Traditional research has suggested the instrumental-expressive dichotomous functions of voluntary associations (Jacoby & Babchuk, 1963). By identifying five types of motivations, this study helps to depict a fuller picture for understanding the functions of voluntary associations. In particular, activism appears to be the strongest incentive to join voluntary associations. Thus, members' sincere concern for environmental and outdoor recreation quality may warrant more academic attention to collective action of recreation organizations. The current study also confirms prior findings on the importance of social, learning, self development attributes of group activities to the decisions of joining recreation associations (Crandall, 1979; Dennis and Zube, 1988). We believe that the motivation typology developed from this study better integrates personal benefits with altruism in examining research on voluntary associations.

Stakeholder Involvement

The findings described in this study offer a basis for further development of collaboration theory. First, the results suggest that the social context and organizational

attributes of each group are of great importance in understanding their different roles, interests, and power relationships in collaborative natural resource management. Second, collaboration can be conceptualized in terms of an “exchange” framework with benefits and costs. In this study, the results have emphasized the role of stakeholder inclusion, leadership attitudes and resource mobilization as motivating conditions for participatory processes. It seems that perceived material values, moral benefits, as well as the positive attitude toward collaboration from organizational decision makers are critical in enhancing stakeholder involvement. On the other hand, agency properties such as heavy bureaucracy, lack of resource, autonomy served as barriers for collaboration. Thus, effective collaboration requires the interested parties to find their fit in the benefit/cost balance.

Wood and Gray (1991) pointed out that identifying expected outcomes when organizations collaborate are particularly important for additional theorizing about inter-organizational collaboration as participants’ commitment in public participation is often shaped with their future “vision” for the resource of interest, goals for accomplishment, and priorities for action. The case of Sam Houston National Forest yields preliminary results on this issue. First of all, public participation can achieve important environmental and social goals. Many of the evaluation criteria were rated favorably, suggesting that public participation can, in fact, meet many of the expectations that have driven its recent growth. Therefore, this study contends the opposite of critics regarding collaboration as idealism that “based on a wealth of anecdotal and hermeneutic evidence and nested within normative assumptions espousing

the benefits of participatory processes” (Kenney, 2000, p.36). Second, even when preexisting relationships were uneasy, innovative collaborative efforts (e.g., the formation of trails coalition) were able to turn around situations to resolve conflict, increase consensus building, and even rebuild trust among stakeholders. Third, despite a growing body of literature on evaluating collaborative efforts, lack of theory guidance, varying definitions, and methodological inconsistencies have weakened the credibility of these efforts (Conley & Moote, 2003). This dissertation offered a comprehensive theoretical framework for monitoring the effectiveness of collaborative forest management. As past research indicates, grass-roots groups are results-oriented and focus on real local ecosystem conditions (Weber, 2000); this study developed a list of tangible forest condition indicators as well as less tangible indicators to gauge stakeholders' competence for achieving tangible accomplishments in the future.

Endorsed by inter-organizational collaboration theory, this study expands our understanding of the environmental contexts, incentives, constraints and outcomes of voluntary associations' collaborative involvement. More importantly, it does not deemphasize the importance of other theories (e.g., environmental communication and common-pool resource), but rather highlights the advantage of integrating different approaches to develop a more comprehensive theory for understanding stakeholder involvement. Communication theory not only sheds light on the procedural aspects of collaboration process, but also could be used to develop a framework by which to analyze collaboration effectiveness. Common-pool resource theory's emphasis on

contextual variables is considered particularly important for understanding and solving complex conflicts. It may be used as a conflict resolution mechanism for collaboration.

Social Psychology of Group Participation

The literature has not sufficiently studied recreationists in organized groups (Manning, 1999; Pigram & Jenkins, 2006; Schuett & Ostergren, 2003). Previous research has focused primarily on individual outdoor recreation pursuits. Arai and Pedlar (2003) asserted that recreation theory should expand research focus beyond the individual to the importance of shared spaces and collective behaviors. By doing so, we might also discover new ways to use outdoor recreation as a vehicle for restoring civic engagement (Putnam, 2001). This study fills a gap by testing a social psychological model that allows us to understand not only the decision to join an outdoor recreation group but also the participation behavior after joining.

To understand motivations for joining voluntary associations, this study has focused on different functions the social agencies serve for their members. The functional theory argued that people who saw a particular motive as important would be likely to pursue a behavior for that purpose (Snyder & Cantor, 1998). The results not only highlight the role of voluntary associations in facilitating the pursuit of individual benefits, but also stressed their power to foster shared meaning, civic engagement, and social well-being. The results also supported the goal setting theory (Locke & Latham, 1994), which views that human action as a motivational consequence. The findings show that perceived outcomes or goals can be viewed as precursors and regulators of action in recreation voluntary associations.

The concept of involvement was drawn originally from the consumer behavior literature and has recently been applied in the recreation context (Havitz & Mannell, 2005; McIntyre & Pigram, 1992; Schuett, 1993). As demonstrated in this study, enduring involvement should be considered as an important antecedent of individual behaviors in the non-profit service provider context.

Although previous studies demonstrated that both motivation and enduring involvement can serve as antecedents of many behavior outcomes, the relationship between motivation and enduring involvement remains unclear. The concepts of motivation and enduring involvement are often measured similarly or used interchangeably (Lee & Scott, 2009). This study empirically tested and supported the proposition that motivation serves as an antecedent of enduring involvement. The finding implies a temporal and conceptual distinction between motivation and involvement. Specifically, the functions of a specific organization activate ego-attitudes (motives) that in turn arouse personally relevant emotions (enduring involvement) and, ultimately trigger expressive behaviors (participation in group activities). By taking a multidimensional conceptualization of membership motivation and enduring involvement, this study provides a comparison basis for sub-dimensional relationships and thus broadens the spectrum of analysis.

Management Implications

There are several managerial implications that may be derived from this study. Although some implications are relatively more explicit than others, all can be beneficial

to the Forest Service and voluntary associations participating in collaborative arrangements in other regions.

It is apparent that land managers can benefit from conducting stakeholder analyses. Stakeholder analyses are keys to understanding the positions and strategies of all stakeholders. To do so, their social, economic, and cultural background and their value and perceptions of the environment and resource use will be a first step toward identifying. Next, the interactions among stakeholders, potential sources of conflict and inequity, and networks with local institutions need to be analyzed. This study reflected an increased demand for recreation access in the SHNF. National forests are counted on to provide recreation for an increasingly growing and diverse population in the surrounding communities. Without enough knowledge about the local communities and careful planning to enable sustainable outputs from the forests, societal needs maybe transferred into negative outcomes such as environmental damage and recreation conflict. Local recreation and environmental organizations are representatives of key forest users. Their multiple views and concerns discussed earlier in this study point to a need for careful attention to stakeholders' values of national forests.

Another implication is related to managing recreation conflict. First of all, inventorying the availability and allocation of resources provides an appropriate start for assessing the likelihood and sources of conflict. When goal interference conflict is present, managers may incorporate zoning strategies. Education programs are more helpful to overcome conflict from different social values. When conflict is caused by the perceptions that past management decisions are unfair, managers should revisit the

decision. Land managers can provide opportunities (i.e., visitor appreciation day, events, and festivals) to enhance intergroup communication, which can help to mitigate conflict that arises from lack of communication. In addition, public agencies should provide a platform for citizens to engage in a conflict negotiation process to facilitate consensus making among stakeholders. Public agencies should also play a role in empowering subordinate groups so that their entitlements to negotiation and consensus making are protected.

Collaborative forest management has been shown to generate both environmental and social benefits to the forest and local community. Thus it is essential for the managers to enhance stewardship capacity through collaboration initiatives. This study provides several suggestions for improving collaborative effectiveness. First, more efforts should be invested in mobilization of resources for collaboration. For example, effort should be dedicated to securing budget resources for projects, training volunteers with skills necessary for stakeholder involvement, and encouraging or rewarding forest staff to engage in collaborative activities. Second is the need to instill a learning environment and take on an adaptive management strategy in the Forest Service's organizational culture. Practitioners must confront the questions of uncertainty as forest management is influenced by current trends in a changing economy and society (e.g., population change in forest communities, changes of public values toward natural resources). Third, the findings of this study suggest focusing on leadership training in enhancing collaboration effectiveness. Decisions on employee transfers need to be made cautiously as personal relationship seems to be critical in aspiring collaborative

initiatives. Fourth, communication constraints between the forest and the general public were reported in the interviews. Therefore, more efforts are needed in providing accurate, understandable, pertinent and timely information and outreach to facilitate effective involvement for the public. It may be helpful to design employee training classes in communication skills to improve outcomes of public outreach. To increase public awareness of forest resources, forest managers need to pay more attention to the message and choice of media as a tool for effective communication.

This study also sheds some light on volunteer management. The membership motivation scale is a useful tool that leaders of these voluntary groups can use when trying to understand potential volunteers' interests and needs during the recruitment and task assignment process. When recruiting new members, managers should promote all types of benefits to be gained by joining an organization (e.g. "We also have fun while trying to enhance sustainability of natural resource). Meanwhile, it would be wise to stress the importance of membership as a means in supporting activism in recreation and conservation. Managers are encouraged to find a "fit" between a potential volunteer's interests and what an organization can offer.

This study also suggests that volunteer managers should pay more attention to highly involved members for several reasons. First, serious members constitute frequent visitors to the forest. Second, they act as informal marketers of the group by word of mouth or may invite friends and family to attend group meetings. Third, involved members are more willing to devote their time and effort for volunteering. This suggests that managers can use their resources better by focusing effort on the involved

members. Information is needed on who may be more likely to become involved and what role they would like to play, so that manager can determine how to take advantage of their interest and support.

Recommendations for Future Research

There are several investigations that we can pursue for further research based on the findings and limitations of this dissertation. First, the case study approach of this dissertation may limit the generalizability of the findings. Therefore, similar studies can be conducted in other geographic regions and natural resource settings. This could provide more nuanced understanding of the issues that have been raised here and to encourage transferability of key indicators of collaboration success in a different context.

Another recommendation is to employ different data collection method. Since only four groups granted the researcher permission to survey their members, members of other groups were unable to be reached and thus, were excluded from the study sample. Therefore, future research could use focus groups or expert panels to include more groups and individuals in the sample.

The measurement of future research could be enhanced in several aspects. For instance, several measurement scales used in this study have not been used in prior research, which may undermine the validity and reliability of the results. The factor loadings of three manifest items in the motivation scale fell below the .70 threshold (Fornell & Larcker, 1981), indicating the latent factors were accounting for less than 50% of the variance in the manifest variable. As a result, new scales need to be further validated in future studies.

Given the lack of available objective data on collaboration outcomes, perceptual survey data were used as a proxy measure of actual collaboration effects. To produce more accurate data in the future, participant attitudes and perceptions data should be supplemented with the objective measurement of ecological and socioeconomic conditions. Pre-project and post-project monitoring are needed to determine whether observed changes can be attributed to collaborative activities. Also, as partnerships pursue multiple goals simultaneously, multiple measures of outcomes are essential. It is hoped that further research will expand our understanding of what can be expected from collaboration processes by including economic, community, and quality of life outcomes. Such measure should also reflect a range of short-term, medium-term, and long-term partnership goals.

In addition, the limited scope of the survey questions constrained our ability to explore the dissertation topic in greater depth. For example, how do organizational attributes influence member's evaluation of collaborative? How does a member's role in the organization influence their evaluation of collaborative? Given the relatively early stage of collaboration efforts with recreation related voluntary associations in the study, many physical/biological outcomes had yet to be achieved by most initiatives. Therefore, the findings need to be validated longitudinally in the future.

As indicated in previous literature, differences on member characteristics and attitudes toward forest issues may exist among different voluntary groups. Further investigation will be needed to investigate group differences (e.g., local group vs. national group or motorized group vs. non-motorized group) on their experiences and

perceptions of collaboration. This study proposed and empirically tested a causal model of participation in non-profit organizations. Although the study results supported the proposed model and most hypothesized relationships, further investigation will be needed to validate the model with other types of organizations (e.g., youth organization, special interest groups). Other organizational factors that may influence participation need to be included in the model (e.g., organizational performance, organizational support, leadership influence).

Concluding Remarks

This dissertation systematically investigated the role and influence of outdoor recreation related associations on forest management. Our analysis suggests that these organizations are actively involved in forest management. They are highly concerned about a number of issues related to recreation resource access, protection and planning. The results suggest several actions the Forest Service and voluntary associations might take to expand collaborative efforts. This research has also raised several theoretical questions that deserve further exploration. The overall message from this research is that an integrated approach should be taken to understand outdoor recreation related voluntary associations and their impacts on individuals and broad society. When planned carefully, collaborative forest management has potential to achieve environmental, social and economic goals for natural resources and local communities.

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APPENDIX A
SURVEY QUESTIONNAIRE

Default Question Block

Part A. Membership Experience

Questions 1-4 focus on your membership history and involvement in the organization.

1. How long have you been a member in the Trail Riders of Houston?

- 0-3 years
- 3-5 years
- 5-10 years
- More than 10 years

Have you attended any organizational meetings in the last 12 months? (e.g., monthly meetings, special events, etc).

- Yes
- No

2. How many meetings did you attend?

3. Reasons for joining your organization (Please check the level of importance for each item).

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
1. Improves environmental/outdoor recreation quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Helps sustain natural areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel compassion toward environmental/outdoor recreation problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. To meet new people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. People I am close to encouraged me to belong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. To have fun in the outdoor environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
7. Supports the group's efforts to influence government action on environmental/outdoor recreation problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. If the group achieves its goals, my life and my children's lives will benefit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Allows me to work with good leaders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Organized groups are not very effective in influencing environmental/outdoor recreation issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I can learn about the natural environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Obtain new knowledge through direct, hands-on experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I can learn how to work effectively with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. The personal contacts I have made through this organization have been useful to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. It makes me feel positive to contribute	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. To feel peace of mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. To feel I am doing something useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I can get member discounts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I can participate in special events hosted by the organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Group membership will help me to succeed in my business or career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Personal involvement with your organization (Please rate your level of agreement with the following statements).					
	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. This organization is very important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
2. Engaging in the group is one of the most satisfying things that I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I really enjoy being a member in the organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. This organization interests me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I find a lot of my life is organized around the organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Group participation has a central role in my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Most of my friends are in some way connected with the group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I enjoy discussing this group with my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. This group says a lot about who I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. You can tell a lot about a person by seeing them in the group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. When I participate in the group I can really be myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. When I participate in the group others see me the way I want them to see me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PART B. Opinions on Forest Management					
Questions 5-6 focus on your attitudes toward the importance and performance of forest management objectives					
5. Please rate how important each management objective is to you.					
	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
1. To enhance the ecological sustainability of the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. To protect habitat for abundant plant and animal species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. To increase economic prosperity in the local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. To reduce the risk of catastrophic fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. To minimize land fragmentation near the national forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all Important	Slightly Important	Moderately Important	Very Important	Extremely Important
6. To protect air quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. To protect sources of clean water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. To provide better access, facilities, and services for outdoor recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. To maintain the scenic beauty of the forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. To provide more timber products and materials for local industries and communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. To protect private property rights near the forest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Please rate the performance of your organization in working with the SHNF in accomplishing these management objectives:					
	Very Unsuccessful	Moderately Unsuccessful	Neutral	Moderately Successful	Very Successful
1. To enhance the ecological sustainability of the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. To protect habitat for abundant plant and animal species	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. To increase economic prosperity in the local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. To reduce the risk of catastrophic fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. To minimize land fragmentation near the national forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. To protect air quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. To protect sources of clean water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. To provide better access, facilities, and services for outdoor recreation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. To maintain the scenic beauty of national forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. To provide more timber products and materials for local industries and communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. To protect private property rights near the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part C. Working with the Forest. In this context, collaborative planning refers to engaging stakeholders in negotiations that apply consensus building to plan and make decisions.

7. Please rate your level of agreement about your experiences working with the Sam Houston National Forest (SHNF).

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
It enhances resource sharing between the forest and the public (information, labor, money)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It reduces recreation conflict among groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It has increased litigation over management decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It helps to leverage outside resources for collaborative projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It limits the implementation of forest projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more confidence in the decisions made by management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have increased trust that management will do what is right for the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more input on actions on resource management issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My input does not influence the decisions made by management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a better understanding of the biological processes in the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have an increased sense of responsibility for the communities near the forest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It builds up connections between the forest and local communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a better understanding of the different forest user groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have an increased sense of responsibility for the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that consensus based decision-making is the most effective way to arrive at natural resource decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I am committed to making collaborative planning efforts work with management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over time, I have learned more about how collaborative activities can be more effective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Part D. Information About You					
Questions 8-12 focus on your socio-demographic information.					
8. What is your gender?					
<input type="radio"/> Male <input type="radio"/> Female					
9. What is your age?					
<input type="radio"/> 18-24 <input type="radio"/> 25-34 <input type="radio"/> 35-44 <input type="radio"/> 45-54 <input type="radio"/> 55-64 <input type="radio"/> 65+					
10. What is the highest level of education that you have completed so far?					
<input type="radio"/> High school <input type="radio"/> Some college <input type="radio"/> Undergraduate <input type="radio"/> Graduate					
11. Are you of Spanish/Hispanic origin?					
<input type="radio"/> Yes <input type="radio"/> No					

12. Are you?

- White
- Black
- Asian or Pacific Islander
- American Indian
- Other

Do you have any other comments?

VITA

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