Caring for Nature:
Motivations for and Outcomes of Conservation Volunteer Work

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Dedication

To all the conservation volunteers dedicated to benefiting the natural world

"The real voyage of discovery consists not in seeking new landscape,
but in having new eyes"
Marcel Proust

"In the end, we will conserve only what we love.
We will love only what we understand.
We will understand only what we are taught."
Baba Dioum

"You must be the change you wish to see in the world."
Mahatma Gandhi

Abstract

The question of what motivates individuals to become conservation volunteers is a critical question for numerous conservation programs that help maintain and improve the environmental quality in modern society. Drawing on literature from the fields of volunteer work, social psychology, leisure, program evaluation and environmental studies, I developed a theoretical framework that explores the connection between motivation and outcomes. Based on this framework, I used a mixed-method approach -- combining surveys and interviews of Minnesota Master Naturalist volunteers -- to better understand what motivates individuals to become conservation volunteers and the outcomes of their efforts. The Minnesota Master Naturalist Program is a volunteer program that educates adults about Minnesota's natural resources and provides opportunities to take part in local conservation projects. I found that both a psychological connection to nature and sense of community both affect conservation volunteer work. A connection to nature both helped initial and sustained participant motivation for conservation volunteer work. A connection to nature is likely an essential characteristic of a conservation volunteer. For most participants this connection began in childhood and volunteering as an adult helped them to stay connected to nature. Shared environmental values may be one of the more important aspects of building a sense of community for conservation volunteers. An extensive training class was a good opportunity for participants to build a sense of community. After an intensive training class, the strong sense of community diminished likely due to a lack of frequent interaction. Creating opportunities for participants to continue to interact after the class may help maintain a sense of community. Conservation volunteer work benefits the environment, the volunteer, and society.

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Introduction

A survey question prompted the following response from a Minnesota Master Naturalist graduate:

> This may sound really hokey, but taking this class changed my life. I feel like a different person. I feel more in line with who I am for having re-established my connection in a concrete way with the natural world. The natural world is key to my mental, emotional, and spiritual health.

I can relate to these sentiments; my connection to nature is an essential aspect of my enjoyment of life. However, the non-economic benefits from the natural world appear to be ignored by many people in the United States of America. This oversight can result in degradation of the environment and the human spirit. However, conservation volunteer work is one way to reverse this tragic devaluation. Through my dissertation research, I aimed to theoretically and empirically explore the motivations of conservation volunteers and the outcomes of their work. I asked the following questions: What motivates individuals to become conservation volunteers? What sustains their interest? How does conservation volunteer work affect the natural world, the volunteer, and society? How can volunteer programs best attract and support conservation volunteers? In the following chapters, I report and discuss the answers I have found to these questions.

In the first three chapters, I explore broad aspects of conservation volunteer work. In Chapter One, I developed a theoretical framework that explores the connection between conservation volunteer motivation and outcomes. In Chapters Two and Three, I utilized empirical findings from Minnesota Master Naturalist participants to explore how these ideas related to my theoretical framework and the findings of other researchers. More

specifically, in Chapter Two, I examined how conservation volunteers relate to nature and how this influences their volunteer work. In Chapter Three, I examined how social aspects, including the community context, influenced initial and ongoing motivation of conservation volunteers.

In Chapters Four and Five, I explored questions about the Master Naturalist program model. Programs that combine education and community service are common in the land grant universities' Extension Services. For example, the Master Gardener program, started in 1973 now has programs in all 50 states and four Canadian provinces (Schrock 1998). Across the United States of America, Master Naturalist programs are a relatively recent program that provides opportunities for adult volunteers to learn about their state's natural history, environment, and conservation issues. In Chapter Four I describe essential features and variations of four Master Naturalist programs, those in Texas, Florida, Missouri and Minnesota. In Chapter Five, I summarize a needs assessment for the Minnesota Master Naturalist program.

In a variety of places including the cockpit of a sea kayak, a restored oak savanna, and behind a computer keyboard, I have aimed to help others connect to nature throughout my professional life. My goal is that this dissertation will help researchers and program organizers better understand the motivations of conservation volunteers and the outcomes of their work. Also, I hope that, ultimately, volunteers will find, maintain, and enjoy a connection to the natural world and help society become more environmentally sustainable.

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Chapter 1. Connections between motivation and outcomes of conservation volunteer work

Introduction

Current and potential roles of conservation volunteers may help create a more environmentally sustainable society. Volunteers fulfill an extremely important role through their work on conservation projects and programs (Ryan et al. 2001). While the goal of their work is to benefit nature, Geist and Galatowitsch (1999) suggest that the relationship is reciprocal because participants benefit from their interactions with the natural world. As a result, conservation volunteers may be good examples of individuals in modern society who have developed and maintained a psychological connection to nature. This connection may play a key role in creating an environmentally sustainable society (Saunders 2003). Additionally, conservation volunteers may be well suited to provide a critical link between conservation biologists and the broader public. Johns (2003) explains that conservation biologists need to find new alliances and mobilize support in order to change environmentally detrimental cultural practices. Redford and Sanjayan (2003) argue that the field of conservation biology needs to become known for informed inspiration rather than continuing as a crisis discipline. They emphasize the need for a positive, realistic vision that shows how both people and nature can thrive. Volunteers have potential to serve as inspirational role models and help conservation biologists promote a positive vision of people and nature through educational programs.

This is a particularly good time to focus on conservation volunteer efforts in the United States. Many governmental and non-governmental organizations rely on conservation

volunteers (Guiney et al. 2006). Over the last twenty years, federal land management agencies' budgets have remained stable or declined (Propst et al. 2003) increasing the importance of conservation volunteers. The current United States administration promotes volunteer service. President Obama encouraged residents to celebrate Martin Luther King, Junior Day by volunteering, and he recently signed the Senator Edward M. Kennedy Serve America Act, which provides funding for volunteer organizations, including those with an environmental focus (Corporation for National and Community Service 2009). Finally, the large and relatively prosperous baby boomer generation (born between 1945 and 1963) is nearing retirement, possibly increasing the number of individuals with time for volunteer work (Culp 2009).

Minimal research on conservation volunteer work exists (Bruyere & Rappe 2007) and conservationists would benefit from a better understanding of the people and processes involved. There is a considerable amount of related research on volunteerism in general, and many motivation studies have used the functional approach (Katz 1960; Clary et al. 1996; Snyder et al. 1999), including the volunteer functions inventory (Clary et al. 1998). The major drawback of this inventory is the lack of attention toward motivations directed toward helping the natural world. In addition, research on conservation volunteer work has focused on individual motivations (Ryan et al. 2001; Bruyere & Rappe 2007) or benefits (Miles et al. 1998). While this is an important contribution, a broader understanding of conservation volunteer work that links individual, environmental, and societal outcomes is needed.

Here, I explore the following three questions: What initially motivates individuals to become conservation volunteers and what sustains this motivation? What are the outcomes of conservation volunteer work? How are the outcomes related to sustained motivation? Drawing on literature from the fields of volunteer work, social psychology, leisure, program evaluation, and environmental studies, I developed a theoretical framework that explores the connection between motivation and outcomes. The overall framework is based on the benefits approach to leisure and logic models (see below). I emphasize outcomes to extend the focus beyond the volunteer activity and to highlight its impacts. I also argue that an individual's initial motivation is based on expected outcomes and sustained motivation is based on his or her perception of actual outcomes.

This model involves two parts: initial and sustained participation in conservation volunteer work. Initial involvement includes three interconnected elements: individual aspects, social context, and connection to nature (Figure 1). Of these three areas, a positive connection to nature is essential, however many individuals have a positive connection to nature but are not active conservation volunteers. Psychological empowerment functions as a bridge between the two parts of the model and emphasizes that an individual needs to feel that he or she can influence society in order to engage in the public sphere. The second part of the model focuses on sustained participation and I outline the positive outcomes of conservation volunteer work to the environment, the volunteer, and society (Figure 1).

Outcomes Focused Paragon

The Outcomes Focused Paragon (previous named the Beneficial Outcomes Approach to Leisure) caused a paradigm shift in how some people think about and manage recreation (Driver 2009; Driver & Bruns 1999). The conceptual framework is based on general systems theory (Buckley 1968) that describes how inputs, outputs, and the structure of a system are interrelated. The basic idea is simple; inputs interact with the system structure and produce outputs. The novel aspect is the focus on outcomes rather than activities. Recreation was traditionally thought of and managed in relation to activities. For instance, a swimming program would focus on inputs (i.e., personnel and facilities) and structure (pool maintenance). The inputs would allow the swimming activity to occur and this activity was viewed as the end point. Managers could measure success by counting the number of swimmers. In comparison, the Outcomes Focused Paragon emphasizes how the activity affects individuals, society, the economy, and the environment (Driver 2009; Driver & Bruns 1999). This approach defines three types of benefits: an improved condition, prevention of a worse condition, and a satisfying psychological experience.

Logic model

A similar outcome-focused approach is the logic model from the program evaluation field (Suchman 1967; Patton 2008). This approach goes beyond evaluating the activity and emphasizes the program impacts. A logic model outlines how the program works by illustrating sequential four steps: inputs, outputs, intermediate impacts, and long-term impacts. For example, an organization may want to reduce storm water run off by encouraging land owners to create rain gardens on their property. Program inputs would

included resources to run workshops that educate land owners and grant money to reimburse landowners for native plant purchases. The output of the program would be the number of citizens educated in the program and the number of rain gardens installed. A logic model would go on to assess the impacts. For instance, the evaluators may survey the workshop participants' attitudes a year after planting the rain garden and assess environmental impacts by measuring storm water runoff from a yard before and after installation of the rain garden.

Initial participation

The framework developed here starts with initial participation, modified from an outline developed by House (1981). House explains that three main elements that impact social support (volunteer work is one example of social support) are individual characteristics, relationship properties, and cultural conditions. I built on House's model, developing a framework for initial participation in conservation volunteering that includes three interconnected parts: individual aspects, connection to nature, and social context. Individual aspects include both individual characteristics and close relationships (family, work, and leisure) and can be described through demographics and motives. A connection to nature describes a feeling that the natural world remains vitally important after basic survival needs are met. Social context describes the extent to which individuals feel a sense of community with other volunteers or potential volunteers. Finally, empowerment is a bridge between the two parts of the model, and emphasizes an individual's sense of contributing to society through conservation volunteer work.

Individual aspects

Demographics

There is little published information about the demographics of conservation volunteers, but considerably more is known about volunteers in general. Overall education level has been the best and most consistent predictor of who volunteers (Smith 1994; McPherson & Rotolo 1996; Wilson 2000). The rational action theory suggests that a higher level of education provides volunteers with more resources that facilitate their efforts (Wilson 2000). Employment, which influences the amount of free time a person has, does not show a clear pattern with respect to volunteer rates. The type of paid work is a better predictor; individuals with higher status positions, i.e., managerial and professional, are more likely to volunteer (Smith 1994; Wilson & Musick 1997; Wilson 2000). This suggests that social interaction through paid work influences volunteer work, i.e. individuals with higher status profession may be asked to volunteer more than those with lower status (Wilson 2000). An individual's income does not show any consistent relationship with volunteering (Wilson 2000). Mid-life individuals (35-55 years old) have the highest rate of volunteering (Smith 1994; Wilson 2000). Interestingly, several studies show that volunteering rates do not increase once someone has retired, but the amount of time spent volunteering increases for those individuals who volunteered prior to retirement (Herzog et al. 1989; Caro & Bass 1997). The minimal amount of published demographic information on conservation volunteers shows that these volunteers have high education levels. For example, most conservation volunteers have a bachelor's degree (over 75% in some studies) and many have advanced degrees (over 30% in some studies) (Still & Gerhold 1997; Haas 2000; Broun 2007; Bruyere & Rappe 2007).

Motivation

Many social psychologists have examined individual motivation to volunteer using the functional approach (Katz 1960; Clary et al. 1996; Snyder et al. 1999). A functional analysis focuses on the personal and social goals behind an individual's thoughts, feelings, and behavior (Snyder 1993). An important concept of this approach is that different individuals can do the same activity, but their motivations and the psychological functions that the activity provides for them may differ. The functional approach highlights the importance of the fit between a volunteer's activities and motivation. If the activities address personal motivations, the volunteer is more likely to be satisfied and continue volunteering (Clary et al. 1998).

Based on the functional approach, Clary et al. (1998) developed a six-category volunteer-functions inventory. The values factor relates to volunteers' concern for others. The understanding factor describes their interest in using and gaining knowledge and skills. The social factor expresses interest in developing relationships with others. The career function expresses the interests participants have in gaining employment skills. The protective functions relate to the desire to protect the ego from negative information. For example, a person may feel guilty about having more resources than others and volunteering may help relieve guilty feelings. The enhancement function relates to personal growth and increased self-esteem (positive effect on the ego). It is interesting to note that the protective and enhancement functions both relate to the ego, but they are measured as separate functions. The authors created separate functions in part because of

relatively new research on mood suggesting that negative and positive affect are separate dimensions and not opposite ends of the same dimension (Clary et al. 1998).

Two studies focused on motivations of conservation volunteers have used the functional approach. Ryan et al. (2001) were interested in understanding commitment and the motivation of long-term environmental volunteers. Using survey items that they designed, the following five factors emerged as important motivators (listed in the order of importance): helping the environment, learning, project organization, social, and reflection. Bruyere and Rappe (2007) created a survey with items from previous studies (Clary et al. 1994, Ryan et al. 2001). Six motivators in their survey, again listed in the order of importance, included: helping the environment, user, values and esteem, learning, social, and career. The user category was a new motivator, not discussed by previous researchers, it describes the idea that people may volunteer to improve a natural area that the volunteer uses or enjoys. All the factors overall were rated as important except career.

Connection to nature

Another likely important predictor of who will become a conservation volunteer is a feeling of connection to the natural world. The biophilia hypothesis argues that humans have an innate interest in life and life-like processes (Wilson 1984) and need nature for more than just physical survival. This hypothesis suggests that a psychological connection to nature fulfills aesthetic, affective, intellectual and spiritual needs.

Schultz (2000) argues that environmental concern is related to how a person defines oneself in relationship to other people and the natural world. He explains that environmental concerns can be grouped into three categories. Egoistic concerns relate to environmental aspects that threaten an individual directly (i.e., pollution that may threaten an individual's health). Altruistic concerns relate to environmental aspects that threaten other people (i.e., pollution that may threaten other people's health). Biospheric concerns relate to environmental aspects that threaten nature in general (i.e., pollution that may threaten species other than people). He emphasizes that these concerns are not independent but relate to a person's concept of self: independent, interdependent with other people, or interdependent with all living things. He argues that individuals who define self and nature as interdependent also feel nature has an inherent value. In comparison, those who feel separate from nature only value nature when it benefits them individually. The concept of an interconnection with nature is also described in popular literature (i.e., Oliver 1992; Nabhan & Trimble 1994) and common in stories from a variety of cultures (Elder & Wong 1994).

While previous research has not specifically addressed conservation volunteers' feelings toward nature, in the motivation studies the "helping the environment" factor has consistently received the highest mean rating (Haas 2000; Ryan et al. 2001; Bruyere & Rappe 2007). In addition, in a qualitative analysis of an open-ended, motivation question, Bruyere and Rappe (2007) found that "getting outside" or a similar comment was mentioned often. These results point to the importance of nature to conservation

volunteers and future studies may show that nature-based volunteer work can enhance volunteers' connections to nature.

Social context

While many studies have explored individual characteristics related to volunteer work, few have explored how the context of the volunteer work affects individual volunteer behavior (Smith 1994; Wuthnow 1998). Context typically involves situational factors such as regions, cities, residential blocks, schools and workplaces (Wilson 2000). However, in relationship to their work on AIDS volunteers, Omoto and Snyder (2002) hypothesized that volunteers can benefit from being part of a psychological community. They agree with McMillan and Chavis (1986) that four essential elements of community (membership, influence, need fulfillment, and shared emotional connection) can be met via community relationships that are not necessarily geographically-based. Community membership may result in positive effects, including improved mental health and increased civic action (Omoto & Snyder 2002). If membership in a psychological community is important, conservation organizations may be able to improve volunteer rates by increasing public recognition of the organization's mission.

Empowerment

An important aspect of conservation volunteering is individual participation in the public sphere. In the field of community psychology, psychological empowerment is described as a process that joins an individual's sense of personal competence with participation in his or her community (Berger & Neuhaus 1977; Rappaport 1981, 1987; Katz 1984;

Rappaport et al. 1984). Zimmerman and Rappaport (1988) argue that individual participation in volunteer organizations is a beneficial context for studying empowerment. Psychological empowerment is described as having three main components: interpersonal, interactional, and behavioral (Zimmerman 2000). The interpersonal component describes the perceived ability to influence social and political systems that are important to the individual. The behavioral component describes the specific actions of an individual that are used to influence societal systems. The interactional component refers to the link between the interpersonal and behavioral components, and describes the process by which an individual successfully influences societal systems.

Outcomes

The second part of my framework outlines the benefits of conservation volunteer work to the environment, the volunteer, and society. Many direct benefits accrue to the environment, because this is the goal of most conservation volunteer work. Volunteers may gain improved health, well-being, and connections to community. Society benefits from the social interactions that occur between volunteers.

Benefits to the Environment

Benefits to the environment from conservation volunteer work accrue mainly through four categories: stewardship, interpretation, citizen science, and program support (Guiney et al. 2006). Stewardship activities involve direct action toward the land such as planting native species or maintaining a walking trail. Interpretation and citizen science activities also have conservation goals, but the benefit to nature is indirect, through education or

scientific research. Interpretation includes educational activities such as designing a brochure or leading a nature walk. Citizen science involves collecting data for scientific research, such as testing water quality or participating in a Christmas bird count. These data are often relevant to conservation (Oberhauser & Prysby 2008) if, for example, they provide information on environmental quality or long-term population trends. Program support activities indirectly benefit nature by providing service to a conservation organization such as fundraising or writing a newsletter article.

Conservation volunteers are dedicated to benefiting the environment (Ryan 2001). Meaningful action for the environment is an important motivator for volunteers working in a variety of areas including urban forestry (Still & Gerhodl 1997), stream monitoring (Haas 2000), and ecological restoration (Miles 1998; Schroeder 2000). Because volunteers are motivated to benefit the environment, researchers recommend sharing with volunteers how their work has helped the environment (Haas 2000; Ryan et al. 2001; Bruyere & Rappe 2007). Several states with state-wide conservation volunteer programs have documented statistics related to how their programs have benefited the environment including number of enhanced acres, number of people reached, and total volunteer hours (Guiney et al. 2006). Communicating these statistics to volunteers may help improve volunteer retention as individuals can see the outcome of their collective action.

Conservation volunteers may develop a connection to the place they volunteer and this place attachment can potentially motivate sustained volunteer work. Tuan (1975) suggested that an attachment to place requires extensive involvement and interaction with

a specific place over a long time. Place attachment is recognized as having two dimensions: functional (meeting an individual's interests – i.e. hunting, bird watching) and emotional (feeling of a connection or belonging) (Williams & Stewart 1988). Emotional attachment can positively influence an individual's concern for natural places (Williams et al. 1992) and increase pro-environmental behavior (Vaske & Kobrin 2001; Payton et al. 2005).

Benefits to Volunteers

Most people believe helping others benefits both the provider and the recipient (Wuthnow 1991) and many studies support the idea that volunteers benefit both physically and mentally from their volunteer work (Wilson 2000). A noteworthy health finding is that volunteers are at lower risk of mortality than non-volunteers (Sabin 1993; Musick et al. 1999; Oman et al. 1999). Volunteer work also increases mental health including self-esteem, self-confidence and overall life satisfaction (Harlow & Cantor 1996). Conservation participants also report numerous benefits from volunteering including enjoying and learning about nature (Miles et al. 1998; Ryan et al. 2001). In addition, Miles et al. (1998) found a significant positive relationship between frequency of volunteering and participant reporting higher levels of life satisfaction and life functioning.

Conservation volunteer work is likely to have both physical and mental health benefits because many volunteer activities involve physical activity and time in the outdoors, and several studies demonstrate benefits from contact with nature. Researchers have observed

positive physiological and psychological results when people view natural vegetative scenes in comparison to scenes without vegetation (Ulrich 1981, 1984; Moore 1981). For example, Ulrich (1984) found that hospital patients recovered faster from surgery if they had a room with a view of a natural area.

Another benefit to the volunteer participant is being connected to a community (Wilson 2000). Social integration is important for mental health (House et al. 1988), and belonging to a community can increase an individual's self-esteem through collective self-esteem (Crocker & Luhtanen 1990) and valued social identity (Tajfel & Turner 1986; Turner et al. 1987). When individuals are successful, other community members feel a sense of pride (Cialdini et al. 1976; Tesser 1988). Being part of a community also encourages civic action when members feel a responsibility toward and desire to help the community. Social reasons are important motivation to conservation volunteers (Miles et al. 1998; Haas 2000; Ryan et al 2001; Bruyere & Rappe 2007) and were ranked higher by individuals who volunteered more frequently than their fellow volunteers (Miles et al. 1998; Ryan et al. 2001).

Benefits to Society

Community

Belonging to a community not only benefits the volunteer, but also benefits society. Often these benefits are described in terms of social capital (Coleman 1988). The basic idea is that interconnections among people in a society often result in increased trust, which leads to more efficient social interactions. Putnam (2000) defined two types of

social capital: bonding and bridging. Bonding social capital describes the benefits of social interaction among individuals from similar social groups, in comparison to bridging social capital, which involves individuals from diverse social groups. An increase of bridging capital helps society by increasing tolerance and empathy (Putnam 2000). Conservation volunteer work may increase both bonding and bridging social capital. Interactions among participants with a similar demographic background can increase bonding social capital, while interactions among participants with a different demographic background can increase bridging social capital. For example, both urban and rural residents are interested in nature. A positive interaction between these two groups via conservation volunteering would build bridging social capital and may increase empathy for concerns of individuals living in different areas. Society or community level benefits have not been measured for either conservation or general volunteer work and would be a challenging yet beneficial area to explore.

Potential use of this framework

In summary, to accomplish numerous conservation goals, dedicated effort of conservation volunteers is required (Ryan et al. 2001). The outcome based framework I describe can help direct and organize research, and future findings may help organizers maintain or increase participant involvement. Finally, conservation volunteers have potential to serve as inspirational role models and help conservation biologists promote a positive vision of people and nature through educational programs.

I use this framework in subsequent chapters to analyze a popular new conservation volunteer program, titled Master Naturalist, which provides opportunities for adult volunteers to learn about natural history, the environment, and conservation issues (Haggerty 1999; Main 2004). Most Master Naturalist programs are organized at the state level and more than twenty-five states have started or are developing Master Naturalist or similar programs (Guiney et al. 2006). These programs all include educational and conservation-oriented community service opportunities. A typical initial training consists of a forty-hour course that incorporates lectures and active learning, including field trips to local natural areas. Advanced training classes on a variety of natural history and interpretation topics are available after a participant has completed the initial course. This framework could help researchers understand the initial and sustained motivation of these volunteers. For instance, an individual may join the program to learn more about conservation practices she or he could use on private land, but this initial motivation may grow to include volunteering on public land. Another individual may not realize how much fun it is to learn and volunteer with like-minded participants until interacting with others in the initial class. This outcome based framework could help to assess the essential elements of creating and sustaining successful conservation volunteer programs.

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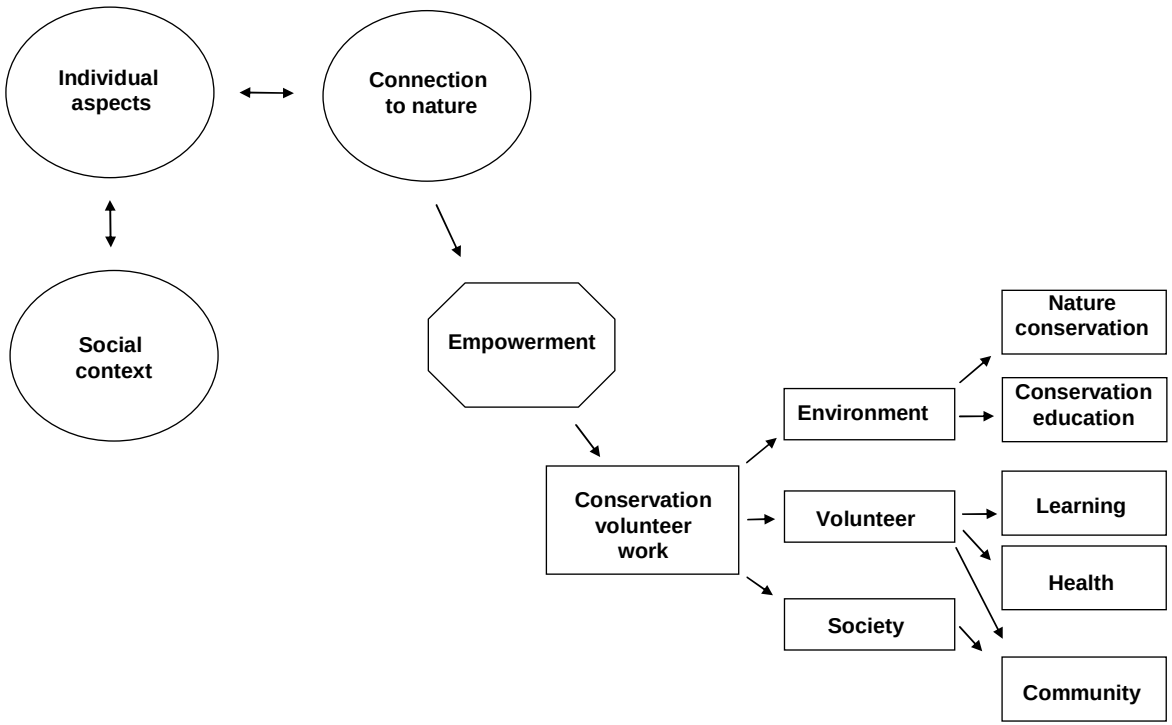
Figure 1. Outcomes–based conservation volunteer work motivation model



Chapter 2: Conservation volunteers' connection to nature

Introduction

Thousands of individuals spend their leisure time volunteering for conservation projects. They pull weeds in the hot sun, carefully examine milkweed for monarch butterfly eggs, help school children identify trees, and plant native species throughout the United States. These volunteers are critical for the continuation of numerous conservation programs that impact environmental quality in modern society. For example, Texas Master Naturalists have provided over one million hours of conservation volunteer service valued at more than $19.58 million between 1998 and 2008 (Texas Master Naturalist, 2009). This is just one example of numerous conservation-focused volunteer programs; volunteers are essential to conservation projects in the United States (Ryan, Kaplan, & Grese, 2001).

In addition to helping conservation volunteer programs increase their effectiveness, understanding why individuals choose to do conservation volunteer work can provide insight into the relationship between humans and nature in modern society and may help us transition to a more environmentally sustainable society. Saunders (2003) argues that in order to create an environmentally sustainable society, researchers need more than just an ecological focus. Researchers also need to concentrate on the psychological relationship between people and nature. Saunders emphasizes that exploring this relationship is a key research agenda in the new field of conservation psychology.

There has been minimal research on conservation volunteer work (Bruyere and Rappe, 2007). To explore the connections between conservation volunteer motivation and

outcomes of their work, I developed an outcome-focused theoretical framework (Guiney, 2009). I focus on outcomes to emphasize the impact of volunteer work beyond the volunteer activity and I argue that an individual's initial motivation is based on expected outcomes and sustained motivation is based on his or her perception of actual outcomes. The first part of the model, initial involvement includes three interconnected aspects: individual aspects, social context, and connection to nature. Psychological empowerment links the two parts of the model and highlights that an individual needs to feel that he or she can contribute to society in order to engage in the public sphere as a volunteer. Sustained participation, the second part of the model illustrates positive outcomes of conservation volunteer work for the environment, the volunteer, and society (Guiney, 2009, Chapter 1, Figure 1).

To better understand volunteer motivation, numerous social psychologists have used the functional approach (Katz, 1960; Clary, Snyder, & Stukas, 1996; Snyder, Omoto, & Crain, 1999) that concentrates on the personal and social goals behind an individual's thoughts, feelings, and behavior (Snyder, 1993). This approach emphasizes that individuals can do the same activity, but the psychological functions that motivate the volunteer activity may differ. Also, if a volunteer activity meets an individual's motivations, the volunteer is more likely to be satisfied and continue volunteering (Clary, Snyder, Ridge, Copeland, Stukas, & Haugen, 1998). Based on the functional approach, Clary et al. (1998) developed the volunteer functional inventory that includes six factors. The values factor explains a volunteers' concern for others. The understanding factor conveys participants' interest in learning and developing skills. The social factor shows

an interest in interacting with other people. The career function describes interest in developing employment skills. The protective function expresses the desire to protect the ego from negative information (i.e., an individual may feel guilty about having more resources than other people and volunteering may help relieve guilty feelings). The enhancement function explains positive effect on the ego (i.e., personal growth and self-esteem).

The major drawback of the volunteer functions inventory for understanding conservation volunteering is the lack of items that address motivations directed toward benefiting nature; the focus of the value function is a concern for other people. To address this missing piece, researchers have added nature-related items relating to "helping the environment" and in two studies these items received the highest ratings (Bruyere and Rappe, 2007; Ryan et al., 2001). In addition, in a qualitative analysis of an open-ended, motivation question Bruyere and Rappe (2007) found that "getting outside" or similar comments were very frequent. These results point to the importance of nature to conservation volunteers.

Here, I examine conservation volunteers' psychological relationship with nature, exploring the following five questions: To what extent is a connection to nature an important characteristic of who will become a conservation volunteer? How do volunteers express their connection to nature? How and when did conservation volunteers develop a connection to nature? How does a connection to nature influence volunteering? How does volunteering influence an individual's connection to nature?

Methods

I used both qualitative and quantitative methods including surveys and interviews of Minnesota Master Naturalist graduates. The purpose of the Minnesota Master Naturalist organization is to educate adults about Minnesota's natural resources and provide nature-based volunteer opportunities (Guiney, Blair, Flinn, Haggerty, Main, Oberhauser, Rager, & Wallace, 2006). Graduates must participate in a 40-hour Minnesota natural and cultural history course. To keep active program status, a Minnesota Master Naturalist volunteer needs to complete eight hours of advanced training and 40 hours of volunteer service annually.

Four categories describe the variety of Minnesota Master Naturalist conservation volunteer service (Guiney et al. 2006): 1) stewardship activities involve direct involvement with the land such as trail clearing or providing nest boxes for native animals. 2) Interpretation includes educational activities such as creating a display or leading a nature walk. 3) Citizen science involves collecting data for scientific research, such as collecting weather data or participating in the annual 4th of July butterfly count. 4) Program support activities indirectly support nature by providing service to a conservation organization such as building bat boxes or maintaining a website.

I interviewed twelve Minnesota Master Naturalist graduates. I used stratified random sampling to pick interviewees from the subgroup of graduates who had reported volunteer hours to the Minnesota Master Naturalist program in 2007 and started their class prior to April 2007. I then split the potential participants into the following groups:

sex, place of residence, and volunteer hours recorded in 2007. The place of residence categories included metro (the Minneapolis/St. Paul seven-county metropolitan area) and Greater Minnesota (any location outside the seven-county metropolitan area). I divided the 2007 volunteer hours recorded into three groups: low (under 39 hours), medium (40-99 hours), and high (100 or more hours). Then I randomly selected one woman and one man who fit in the following six groups: low hours/metro, low hours/non-metro, medium hours/metro, medium hours/non-metro, high hours/metro, and high hours/non-metro. I was unable to meet with two of the individuals I originally selected, so I finished the sampling plan by contacting additional randomly selected participants in the missing groups. While each individual is not representative of all individuals with the same sex and residence location, this approach improved the likelihood that I interviewed a variety of individuals. I used a semi-structured interview method, asking the similar overall questions but the specific wording and follow-up questions varied (see Appendix A). The interviews were recorded in person or on the phone and then transcribed. Additional information about the interviewees is provided in Appendix B.

I also collected survey data at two different times from 285 Minnesota Master Naturalist participants who graduated between December 2005 and 2007: the start of each individual's initial 40-hour class and an annual survey (relevant questions are in Appendix C). The annual survey, completed in summer 2008, included all participants who had been graduates for a minimum of six months. I used a confidential code to keep track of individuals and combine information into one database. I received 252 responses (88% response rate) for the start survey and 193 responses (69% response rate) for the

annual survey (five participants moved out-of-state or were not reachable by email, mail or phone so they were not included in this response rate calculation). Of the 193 respondents to the annual survey, 171 had completed volunteer service since they graduated from their class and are described and analyzed as volunteers in this study. For the section exploring if a psychological connection to nature is an important influence of becoming a conservation volunteer, I analyzed 86 participants who started volunteering due to their participation in the Minnesota Master Naturalist program.

The relevant survey and interview questions focused on an individual's connection to nature including the process of developing and maintaining this connection. I also emphasized initial and ongoing motivation to volunteer. For example, in the annual survey to compare various motivations, I asked volunteers to rank potential reasons they volunteer. Several of these reasons were based on previous research and adapted from validated recreation preference scales (Manfredo, Driver, & Tarrant, 1996).

I collected most of the survey data electronically using the Survey Monkey website (www.surveymonkey.com) and used paper surveys via mail for participants who preferred this option. I used a modified Dillman (2000) technique for developing the questionnaire and interacting with respondents. I analyzed the quantitative data with SPSS 15 software and the qualitative data with Atlas.ti software using the constant comparison method (Charmaz, 2006).

During the analysis of the survey data, I noticed a pattern of some participants apparently reversing the response scale for some questions, i.e. responding “very unimportant” when other responses suggested that they meant to respond “very important.” Eleven participants appeared to reverse the scale for some or all of the reason they volunteer items, therefore I did not include their responses in the analysis of this question. I suspect this potential mistake may be more common with internet surveys because respondents may be more likely to read the survey quickly.

Results

Individual characteristics

Minnesota Master Naturalist volunteers were predominantly middle-aged, adult, and well-educated. The age range was 22 to 77 years old with a mean age of 51 years. There were more women (65%) than men (35%). A majority of volunteers have a bachelor’s (43%) or an advanced degree (34%) and the remaining have finished some college (22%) or completed high school (2%). All of the volunteers stated they were Caucasian (100%). The majority of the volunteers were employed full-time (53%), 23% were retired, 16% work part time and 9% were not employed. These volunteers had a wide range of household income levels (13% earn less than $30,000; 23% earn between $30,001 and $50,000; 24% earn between $50,001 and $75,000; 21% earn between $75,001 and $100,000; 19% earn $100,001 or more).

The characteristics of the twelve interviewees (all names used in this paper are pseudonyms to maintain confidentiality) were similar to the overall volunteer

characteristics (Appendix B, Table 1). Six of the 12 participants were between 40 and 55 years old, with four older and two younger participants. Overall, the group was highly educated, with the majority having a bachelor's or advanced degree and most worked full-time (two individuals are retired). All of the interviewees were Caucasian. The interviewees were involved in a wide variety of volunteer service, with all but three of them engaging in more than one category of conservation-related activity (Appendix B, Table 2). Interpretation was the most commonly mentioned volunteer category.

Connection to nature

Based on the annual survey data nearly all volunteers (98%) felt connected to nature either to a moderate or great extent (Table 1). Volunteers in the interview group varied on how they described this connection to nature. Tom mentioned, "I'm another being and it just seems to me there is some interconnection for all us." Savannah expressed a similar feeling, "I know that humans are not separate, not above, we are all a part of the connection." Adam said, "We're no different than a plant. I mean, we're part of this universe." Brian shared, "I feel intimately connected … it's always been a part of me but … now I feel like it's really a part of who I am."

Other interviewees seemed to share a similar feeling, but had more difficulty in expressing themselves. Rose said, "We all rely on nature and everything. I like to go fishing and I like to go camping, and hiking. And of course I grow a garden and everything like that and I love animals so. I would say I'm really connected to it." When I asked, "What are some of the influences of how connected you feel?" Rose replied,

"Well, like you said today, the snow out there is pretty." We both laughed and then she said, "I don't know, I mean, it's just part of me." Vanessa also had difficulty describing her connection to the natural world. She said,

> Very, how do I explain, I'd rather be outdoors, I recycle, I feel really bad about driving. I do try to be environmentally conscious as much as possible when it is possible…the nature-based stuff I think it's all from growing up, we built tree forts growing up, we kept turtles, it's just always been there.

When and how volunteers became connected to nature

A connection to nature is an important characteristic of Minnesota Master Naturalist volunteers. Nearly all volunteers conveyed that nature was very or extremely important to them in an open-ended question about the importance of nature in the start of class survey. Several respondents expressed that along with family, nature is a top priority in their life, and others felt a spiritual connection to nature. In explaining why nature was important to them, participants noted physical survival, mental health, learning, and enjoyment. For example many shared the sentiment that one volunteer wrote, "I need to stay connected to nature to stay physically, mentally and spiritually aligned. Otherwise, I risk losing my sense of self, my purpose, and my motivation." In addition, many respondents elaborated on nature's importance to other people, especially children, and the intrinsic value of the natural world.

In the start of class survey, volunteers indicated that a variety of factors influenced their initial interest in nature (Table 2). A higher percent of respondents marked activities that involved unstructured interaction with wild nature (camping, watching wildlife, fishing) than structured activities (classes, organized groups) or interacting with domesticated

nature (caring for pets). Many respondents felt family and friends were also influential in cultivating an interest in nature.

A wide majority volunteers were 10 years or younger when they became interested in nature (Table 3). Many volunteers explained that they had been interested in nature their entire life or as long as they can remember. One survey respondent wrote, “I can't say that there was any one particular event or circumstance that piqued my initial interest in nature. My family was not at all interested in the outdoors or outdoor activities. Therefore for me it was an intrinsic interest, always there, always within me.” Other volunteers described a variety of activities that sparked their interest, including unstructured exploration, observing wildlife, and collecting natural items. The following quotes from the start of class survey described some of these activities:

> Mom would yell, 'You kids go play outside!' And we would.
>
> I lived on a farm and I was constantly exploring ponds, sloughs, woods, trees, flowers, fields, etc.
>
> By collecting everything from fossils to feathers.
>
> As a toddler, I was fascinated by the behavior of my cat Tony. Tony was a mouser and quite a predator. I studied his hunting technique and wondered about his catch rate and release rate. I later decided to aid him in his endeavors and caught many mice, before I turned three, much to my mother's disgust.

Regular contact with natural areas was important in helping individuals develop an interest in nature and many survey respondents specifically mentioned farms (owned by parents or other relatives), cabins, parks, and undeveloped land. Many participants also described family members, especially parents and grandparents, who were actively involved in helping them develop an interest in nature.

Survey respondents also frequently mentioned curiosity and learning. One person shared, “I was always bringing things home and asking questions.” Others described influential books, magazines, and TV shows as enjoyable ways to learn more and nature. It was more common for those who felt they initially became interested in nature between the ages of 11 and 19 to specifically mention a high school or college class.

A few volunteers felt their interest in nature occurred when they were adults (20 years old or older, Table 3). Family and career were two commonly mentioned aspects that influenced this development. For example, one survey respondent said, “[I] started watching/feeding birds when I took a year off of work to care for my two small children.” One more volunteer mentioned his daughter’s influence of wanting to go camping. Another person described, “[Being] raised on a farm gave me a background that I did not appreciate or even know. A full career working with information technology gave me a new appreciation for outdoors, nature, and organic things.”

Similarly several people wrote that they were interested in nature at a young age but later reconnected to nature as an adult. For instance, one survey respondent said that, “My daughter has a degree in Fisheries and Wildlife with a minor in Biology Conservation. She was the catalyst. I have always had an interest but had not pursued it.” This experience of reconnection was also mentioned by interviewees. Matt found reconnecting on a weekly basis was important after he switched jobs from working outdoors at a state park to an office job as a pollution control specialist.

> I very much felt disconnect[ed] from nature and I could almost feel like I was on pavement, like I was separated from the soil and the vegetation and it was strange.

> But there almost kind of a level of anxiety associated with that, I'd feel disconnect[ed] so since I got this office job it seems like I go out on the weekends even more and go out hiking at the state parks.

Brian decided to change to a less stressful career and became involved in conservation volunteering,

> I spent 15 years as a marketing executive, public relations executive…I spent all this time being successful and in traditional American terms but was missing my true love [of] my family [and] the outdoors … at a certain point with the help of my family we just said we're going to change. [I] started doing consulting work, quit the traditional job and started doing things that were really important in life.

How a connection to nature influences volunteering

Motivated to help nature

One of the most important motivating factors to conservation volunteers was making a positive difference to the natural world. Nearly all respondents of the annual survey ranked all the nature-related items as somewhat or very important motivating factors, with a higher ranking for these items than others (Table 4). Similarly interviewees mentioned that they value nature and that volunteering allows them to put these values into action. Matt valued his volunteer work because it, "[makes] a difference. Just having that feeling that you're increasing people's knowledge and increasing their interest and passion; and … doing resource management work. Those are the two main things." Paula also said, "I think it makes a difference… that's the greatest value." Carol, a lawyer, described the meaning of her volunteer work in terms of leaving a legacy,

> because I don't have children, and at 50 I'm very conscious of what my legacy is going to be. And it might not be …. [a] building with a name on it or [a] park bench with a plaque on it, but when it all comes down to it… I will be able to look back and see a body of work that I've done that I can feel good about.

Interviewees often shared their motivation in terms of wanting to give something back to nature. Savannah shared, “I consider myself an earth-based spiritual person… now I am able to live more fully my spiritual connection with nature in a very practical, hands-on way.” Evan, a purchasing agent who goes camping once a month, said,

> I like feeling like I’m accomplishing something positive.... I feel like I take a fair amount out of the system, … I use our city parks, our county parks, and our state parks a lot, and it’s a way of… putting something back into the system. And so, I feel good about that.

Tom’s remarks were similar, “if I can contribute … that’s going to feel good about my giving back something.” Matt found “resource management volunteer work, removing weeds and such …it’s rewarding … to see [the] difference that you’re making. In reference to protection of an eagle’s nest, Francie said,

> You have heard that story about that little boy walking down the sea shore with thousands of starfish that have stranded themselves. Well, you know it does matter, maybe it doesn’t matter to 999 bald eagles, but it matters to that one…What I’m doing matters…

Conservation volunteers also felt educating people was very important. All of the education related items in the annual survey were ranked important by a wide majority of conservation volunteers (Table 4). Several interviewees also described the importance of education. Tom, a psychologist, said, “It’s rewarding for me to present something to people and see sort of that moment of awareness, or ‘ah-ha’ moment… so I feel like I’m giving them something that they can relate to, …enjoy and … benefit from and that in turn gives me a lot of value.” As a former elementary school teacher Paula’s passion was teaching kids, and she was concerned about children not developing an appreciation of nature due to a lack of time outside. One of her many volunteer activities was leading

outdoor programs for children and their parents. She felt increasing knowledge and appreciation of nature was an important step toward motivating people to reduce society's negative environmental impacts.

Personal benefits of volunteering

Conservation volunteers found that their volunteer work provided numerous personal benefits by increasing their contact with nature and providing opportunities to spend more time outdoors. The two items in the annual survey, "to be close to nature" and "to be outside in a natural area," were both ranked as very important motivating factors by a majority of volunteers (Table 4). Interviewees also described benefits from being in nature. Savannah chuckled as she described her motivation, "It gives me a reason to go and find places in nature that are good for me, and at the same time I'm doing something for somebody. I'm giving something back but I'd say the biggest thing is to get me out." Evan also says one of the personal benefits is "an excuse to get outside." Francie, who was studying environmental studies in order to change careers, remarked, "Because I love it…I like being outside and it gives me an excuse." Brian, who in mid-life made a dramatic career shift from a corporate executive to a professor, expanded on this idea and explained that one benefit of volunteering was increased access to special natural places.

> When you're a volunteer at a state park you get access to places you wouldn't normally get access to… I was at one park that had lady slippers and the location was kept very, very secret because they didn't want plant robbers to come take them. Well, because of my [volunteering] there I was taken to see them. What an amazing sight.

Many participants mentioned that conservation volunteer work provided opportunities for them to learn more about the natural world. A large majority of volunteers ranked "to learn more about nature" as a very important motivating factor in the annual survey (Table 4). Many interviewees elaborated on the connection between volunteering and learning. Brian said, "I'm always looking for different ideas and different ways to present and keeping more in touch with what's going on, not only politically, but educationally within that whole conservation area. So it keeps me more aware and more on my toes." In reference to working on a newly formed neighborhood group focused on the urban lake where he lives, Kevin shared, "I really like learning about nature...I think this lake is going to offer a lot of opportunities for me to learn more about it. It's an interesting lake. It's small, it's shallow, it has lots of plant life. People like it because of all the birds it attracts." Evan, a purchasing agent, also emphasized learning, "I've learned something from everything I've done…every time I go out and listen to frogs after doing a frog count, I'm going to enjoy it a little bit more, because I got a little better idea of what's actually going on." In response to what sustained her interest, Rose, who has been a Girl Scout leader for twenty-nine years, mentioned, "It seems like every time I go out I learn something new. And now that I'm older I look at things differently. I used to see a bird fly - big deal; now it's like, so is that an eagle, or is it a hawk, and what kind of a hawk?" Tom was also motivated by learning and he expanded the importance of learning about nature to all of society:

> I'm going to be learning a lot myself. So it just increases my appreciation of things. I guess I'm kind of one of those [who] believes in the 'last child in the woods' sort of theory. I do think our society as a whole is becoming more nature-deficient ... and that we need to find some ways to help people get back to

> [nature] and if I can help contribute to the enjoyment of nature, [it] is going to be good for our society.

Improved health was another commonly mentioned personal benefit, especially stress reduction and relaxation. Survey respondents and interviewees also mentioned exercise, but not as frequently as mental health benefits or other motivating factors (Table 4). Savannah described personal benefits from a recent volunteer experience this way:

> I spent three hours on Saturday in beautiful woods, almost by myself except for the chickadees and the owls, just walking around gathering buckets of sap [to make into maple sugar]. It's good for my stress level. I am a teacher, so this brings my stress level way down. It's physically good for me, and I know it matters to somebody... It's fun, fulfilling, and it's healthy.

Tom said,

> As a psychologist, trying to help people look at ways to manage stress, [I also]… have to look at what are the things that help me so that I can be healthy and I can present myself in a healthy way. And I think that my love of nature and my work in nature helps me with that… I'll [say] it grounds me.

In describing the difference between personal benefits of nature-based volunteering versus non-nature based volunteering, Tom found a difference in energy. For ten years he has done non-nature based volunteer work as a member of a critical incident stress management debriefing team. This involved helping community members process particularly difficult events such as floods or tornados. He described this work as "really hard work… and it typically is mentally or emotionally exhausting to do. Where …volunteer work with nature, that doesn't feel exhausting to me, it is one of those things I feel like I could do that all day and want more." Carol shared a similar idea as she compared volunteer work that was outside versus inside; "I get restored … replenished

when I'm doing the work outdoors, the hands-on work. When I'm doing the committee work and the governance that tends to be very much draining."

Discussion

Importance of a connection to nature

Conservation volunteers expressed their connection to nature in both cognitive and emotional terms. From a cognitive perspective, ongoing learning was an important aspect of volunteers' relationship with nature. From an emotional perspective, participants mentioned their enjoyment and love of nature. These two perspectives are interconnected as curiosity and passion often fuel each other. Leopold (1949) emphasizes the importance of intellectual and emotional connection to nature in his description of the land ethic. He explains that in order to live responsibly with nature, people need to both understand and love the natural world and realize that people are part of nature, not conquerors of nature.

The biophilia hypothesis contends that humans have an innate interest in life and life-like processes; people need nature to fulfill needs beyond mere survival including aesthetic, affective, intellectual and spiritual (Wilson, 1984). Conservation volunteers in this study described numerous benefits they received from nature including aesthetic (i.e., appreciation of natural beauty), affective (i.e., stress reduction), intellectual (i.e., desire to learn) and spiritual (i.e., connection to something larger than self). Many volunteers originally became interested in nature at a young age, and many felt this interest had always existed, providing support that a love of nature is innate.

Schultz (2000) theorizes that environmental concern is related to how a person defines oneself in relationship to other people and the natural world. Environmental concerns can be sorted into three categories. Egoistic concerns describe environmental characteristics that threaten an individual directly (i.e., poor water quality may threaten an individual's health). Altruistic concerns describe environmental characteristics that threaten other people (i.e., poor water quality may threaten other peoples' health). Biospheric concerns describe environmental characteristics that threaten nature in general (i.e., poor water quality may threaten species other than humans). He highlights that these concerns are not independent but relate to a person's concept of self: independent, interdependent with other people, or interdependent with all living things. The term of "being connected to nature" or other similar phrases are also described in popular literature (i.e, Snyder, 1990; Williams, 1992) and frequently mentioned in stories from numerous cultures (Nabhan, 1998). In this study, volunteers felt nature was important to self, others, and all living things. Volunteers also described self and nature as interconnected. These findings suggest that these conservation volunteers had biospheric concerns and viewed themselves and nature as interconnected.

Conservation volunteers varied in how easily they could communicate their connection to nature. Saunders (2003) argues that in order to create a more sustainable society, people need to change their attitude and behavior toward the natural world. Saunders argues that "we need a better understanding of the human-nature experience and a more compelling language to express what we value and love." Saunders explains that an important research focus of the emerging field of conservation psychology is an improved ability to

communicate about the people's value and love for the natural world. Conservation volunteers in this study varied in their abilities to speak eloquently about their connection to nature. Those conservation volunteers who can speak about their connection to nature in clear and passionate manner could be effective communicators, especially in interpretation activities, and may be more successful at encouraging others to protect nature. A productive avenue for further research would be studying how intensive learning about the natural world combined with ongoing volunteering influence individuals' abilities to convey their connections with nature articulately.

Conservation volunteers in this study also illustrated the variety of ways in which people initially became connected with and maintained a connection to nature. Most became interested in nature at a young age and were involved in a variety of nature-related activities as children. Some of these activities were with family and friends, and these social interactions are likely to have reinforced their interest in nature. Several studies have found that nature activities in childhood are important in developing a concern about the environment in adults (Tanner, 1980; Chawla, 1999; Kals, Schumacher, & Montada, 1999; Bixler, Floyd, & Hammitt**,** 2002; Ewert, Place, & Sibthorp, 2005; Lohr and Pearson-Mims, 2005; Wells and Lekies, 2006). Louv (2005) argues that children in modern society are suffering from nature deficit disorder due to a lack of time spent playing in the outdoors. This study expanded on the arguments of Louv and others by illustrating how staying connected to nature in adulthood involved a process of reconnection and maintaining this connection. This was an important role of conservation volunteer work. Many participants mentioned that their volunteer work provided extra

motivation to spend time outdoors in contact with nature. Finding time to spend in nature may be difficult to prioritize with the busy lives many people lead but a commitment to volunteer work may provide the needed extra motivation.

A connection to nature was an important attribute that contributed to participant desire to benefit the environment through volunteering. Conservation volunteers in this study were passionate about assisting conservation efforts and making a difference. Researchers have found that benefiting the environment is an important motivator both for conservation volunteers in general (Ryan et al., 2001; Bruyere and Rappe, 2007) and those working in specific areas including urban forestry (Still and Gerhodl, 1997), stream monitoring (Haas, 2000), and ecological restoration (Miles, Sullivan, & Kuo, 1998; Schroeder, 2000). Because volunteers are motivated to improve the environment, researchers recommend sharing with volunteers how their work has benefited the environment (Ryan, et al. 2001; Bruyere and Rappe, 2007). Several states with state-wide conservation volunteer programs have collected information including statistics that show volunteering has benefited the environment, including volunteer hours, people reached through interpretive programs, and number of enhanced acres (Guiney et al., 2006). Sharing this information with volunteers may help maintain volunteer motivation as individuals can see the results of their collective action.

Other benefits of conservation volunteer work

In addition to strengthening and acknowledging their connection to nature, conservation volunteer work may benefit volunteers through improved health. In this study participants

felt conservation volunteering enhanced their mental health through contact with nature, learning, and a sense of accomplishment. Researchers have found that people benefit from viewing natural vegetative scenes in comparison to scenes without vegetation (Ulrich, 1981, 1984; Moore, 1981). Other studies show that conservation volunteer participants benefit through learning (Miles et al., 1998; Ryan et al., 2001). In addition Miles et al. (1998) found a significant positive relationship between volunteers who volunteered more frequently and higher reported levels of life satisfaction and life functioning. Some participants in this study reported that exercise is an outcome of their conservation volunteer work, as did Miles et al. (1998). Exercise as a benefit was likely to vary among volunteers, who participated in a variety of service activities with varying levels of physical exertion.

Future research and limitations

This study examined how a psychological connection to nature relates to conservation volunteer motivation. As an initial study in this area, the data reported are broad and exploratory. Future research could aim to better specify and potentially quantify the concept of a connection to nature into a psychometric scale. This would involve determining and creating items to measure multiple components of this concept. An instrument measuring “a connection to nature” would allow researchers to discover multiple aspects of this concept and if/how it varies within an individual (i.e., does a connection to nature or do certain components of a connection to nature vary for an individual in different situations?), between individuals (i.e., does the measurement of this concept differ for those who actively participate in conservation volunteer activities

than those who are not conservation volunteers) and between cultures (i.e., does the measurement of this concept differ for individuals from different cultures?) A limitation of this study is all the information came from volunteers from one program. Future research could assess other programs in different locations to test the generalizability of these findings.

Recommendations

In order to enhance volunteer experiences and trainings I have three recommendations for program managers. First, share with participants how volunteers have benefited the environment (i.e., before and after pictures of a restoration, updates of a project's progress, number of enhanced acres, findings of citizen science projects, examples of education efforts). Because many volunteers are motivated by strong feelings for nature and a desire to help preserve it, sharing this information is likely to increase their motivation to stay involved in volunteer activities. Second, during volunteer trainings provide opportunities for participants to share their connection to nature through discussion (sample topics include: the importance of the natural world, initial interest in nature, how to stay connected to nature, how volunteering affects their connection to nature). These discussions can help participants become more articulate about the importance of the natural world, and communication of these ideas to others may help society become more environmentally sustainable. Finally, provide opportunities during training and work projects for volunteers to learn about nature and develop naturalist skills (i.e. observation, journaling, identification). These opportunities will help

participants feel connected to the natural world and may increase ongoing volunteer motivation.

In conclusion, a connection to nature is likely an essential characteristic of conservation volunteers. For most volunteers this connection began in childhood and volunteering as an adult helped them to stay connected to nature. Conservation volunteers have varying ability to express how they felt connection to nature and those who spoke effectively could be good resources to communicate the value of nature to society. A connection to nature both helped initial and sustained participant motivation for conservation volunteer work. Finally conservation volunteer efforts benefited both the environment and the volunteer.

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Table 1. The extent to which Minnesota Master Naturalist volunteers feel connected to the natural world.*

Not at all	0%
To a slight extent	2%
To a moderate extent	33%
To a great extent	65%

*Response to annual survey question, "To what extent do you feel connected to the natural world?" n=158

Table 2. Factors that helped Minnesota Master Naturalist volunteers develop a connection to nature *

Factors	**Percent**
Camping	65%
Family	60%
Bird watching	51%
Living near natural places	50%
Watch wildlife (other than birds)	47%
Friends	4%
Fishing	4%
Class in school (elementary - college)	3%
Activity or class at nature-based center (camp, nature center, zoo, etc.)	3%
Caring for pets	3%
Formal group (Boy Scouts, Girl Scouts, 4H)	3%
Hunting	2%

*Response to start of class survey question, "What factors influenced your initial interest in nature? (Please check all that apply.)" n=145. The sum of the percents is higher than 100 because respondents were asked to check all that applied and many checked more than one activity.

Table 3. The age Minnesota Master Naturalist volunteers were when they became interested in nature.*

Age	**Percent**
4 years old or younger	30%
5 to 10 years old	43%
11 to 15 years old	11%
16-19 years old	3%
20 to 25 years old	5%
26 to 30 years old	4%
31 years old or older	5%

*Response to start of class survey question, "How old were you when you became interested in nature?" n=145

Table 4. Minnesota Master Naturalist graduate ratings for reasons they volunteer. Mean values from a five point scale (1=very unimportant to 5=very important)*

Reasons to volunteer	**Mean**	**S.E.**	**Tukey Group**
To learn more about nature*	4.82	0.0704	A
To be close to nature*	4.71	0.0706	AB
To be outside in a natural area	4.69	0.0704	AB
To give something back to nature	4.59	0.0709	AB
To have fun	4.49	0.0706	ABC
To improve natural areas	4.48	0.0704	ABC
To educate others about conservation**	4.45	0.0706	BC
To educate others about nature**	4.45	0.0706	BC
To help others develop a stewardship ethic*	4.41	0.0706	BC
To be with people who value nature**	4.20	0.0704	CD
To meet new people with similar interests**	4.08	0.0706	D
To get exercise*	3.93	0.0709	DE
To get away from the usual demands of life*	3.92	0.0714	DE
To network with others	3.68	0.0711	E
To develop skills to change careers to a nature-related career	2.82	0.0711	F
To benefit your career	2.67	0.0711	F

* Response to annual survey question, “Please rate each of the following reasons for your participation in nature-based volunteer work.” n=144 to 148 depending on the item. **item worded the same as recreation preference scales *** item wording modified from recreation preference scales. (Manfredo et al. 1996). All items followed by the same letter are statistically indistinguishable at the 0.05 level of confidence, Tukey HSD All-Pairwise Comparisons Test.

Chapter 3. Community context of a conservation volunteer program

Introduction

Each year thousands of participants are involved in volunteer service that helps maintain and improve environmental quality in the United States. Stewardship activities, such as removing invasive species, benefit the land directly while interpretation and citizen science provide indirect benefits through education and scientific research (Guiney et al. 2006). Even though the main goal of conservation volunteering is benefiting the natural world, the social context of volunteering is likely to influence volunteer motivation and outcomes of this work. While studies have explored individual characteristics related to volunteer work, few have explored how the social context of the volunteer work affects individual volunteer behavior (Smith 1994; Wuthnow 1998). Here, I examine how the social context, including sense of community, influences the initial and ongoing motivation of conservation volunteers.

There has been minimal research on conservation volunteer work (Bruyere and Rappe 2007) and conservationists would benefit from a better understanding of the people and processes involved. Research on conservation volunteer work has focused on individual aspects, i.e., motivations (Bruyere and Rappe 2007; Ryan et al. 2001) or individual benefits (Miles et al. 1998). These studies found that social components were important, but social factors were not ranked as high as other factors. In addition, two studies found that social reasons were ranked higher than other factors by individuals who volunteered more frequently than their fellow volunteers (Miles et al. 1998; Ryan et al. 2001).

Social factors are often recognized as an important aspect of volunteer work in general. Omoto and Snyder (2002) created a volunteer process model to conceptualize how volunteering both occurs and connects several levels of analysis including the individual volunteer and related groups (i.e., the volunteer organization, social system). In describing important elements of social support (volunteer work is one example of social support) House (1981) included individual characteristics, relationship properties, and cultural context. I developed a theoretical framework that expanded on this outline and examines the connection between conservation volunteer motivation and outcomes (Guiney 2009). This two part model includes both initial and sustained participation in conservation volunteer work. Initial involvement involves three interconnected elements: individual aspects (individual characteristics and close relationships), connection to nature (a feeling that natural world is vitally important beyond basic survival needs), and social context (a sense of connection with others) (Guiney 2009, Chapter 1, Figure 1). Empowerment acts as a bridging concept that emphasizes that an individual needs to feel that he or she can influence society in order to participate in public activities. The second part of the model focuses on sustained participation and I outline the positive benefits of conservation volunteer work to the environment, the volunteer, and society (Guiney 2009, Chapter 1, Figure 1).

The concepts of social capital and psychological sense of community can help researchers better understand how volunteer motivation is affected by the social context. Recently there has been considerable interest in social capital (Bourdieu 1986; Coleman

1988; Putnam 2000). Social capital exists within relations between people and the quality of these relations can impact productivity (Coleman 1988). For instance, a group of individuals who trust each other will cooperate better than a group that lacks trust. Based on their natural resource management research, Pretty and Ward (2001) describe four important elements of social capital: relations of trust; reciprocity and exchanges; common rules, norms and sanctions; connectedness, networks, and groups.

A psychological sense of community is the "the sense that one belongs in and is meaningfully a part of a larger collectivity." (Sarason 1974, p.41). In a review of relevant literature, McMillan and Chavis (1986) found that initial studies examined geographically bounded areas where people live in relatively close proximity, i.e., neighborhoods, towns, and kibbutzim. They expanded on these empirical studies by developing a theoretical framework that includes communities that are based both on geography (i.e., neighborhoods and cities) and relationships (Gusfield 1975). A relationship community, which may or may not have geographic boundaries, is created by individuals drawn together to connect with others who have similar interests and skills. The relationship community (e.g., professional, religious, interest) is more common in modern society than geographically-based communities (Durkheim 1964). Using both relationship and geographically-based communities, McMillan and Chavis (1986) described four essential elements to define a community: membership, influence, need fulfillment, and shared emotional connection.

Omoto and Snyder (2002) explored how the community context affects volunteers and proposed that belonging to a community can increase an individual's self-esteem through collective self-esteem (Crocker and Luhtanen 1990) and valued social identity (Tajfel and Turner 1986; Turner et al. 1987). When individuals are successful, other community members benefit by feeling a sense of pride (Cialdini et al. 1976; Tesser 1988). Being part of a community also encourages civic action because members feel a responsibility and desire to help the community. A successful community experience can provide individuals with increased confidence and resources that can lead to psychological empowerment (Chamberlin 1997; Corrigan et al. 1999; Rogers et al. 1997; Zimmerman et al. 1992; Zimmerman and Rappaport 1988). Empowered individuals result in a positive feedback loop where these individuals are likely to increase actions that benefit and enhance both the individual and community.

Volunteers may be more likely to experience a sense of community when they participate in programs that include both a training and service component; collective training may help to develop the sense of community, and enhance the perceived benefits of the volunteer service. This style of program is common in land grant universities Extension Service. An excellent and wide-spread example is the Master Gardener program, started in 1973 and now with programs in all 50 U.S. states and four Canadian provinces (Schrock 1998). The group training, sense of being a part of a larger whole, and volunteer service aspects of the program may all contribute to a sense of community that enhances individual benefits from the program and leads to sustained involvement.

To better understand conservation volunteer work, I examine how social context, including a sense of community, influences the initial and ongoing motivation of volunteers. I explore conservation volunteer motivations and how volunteers view environmental problems. I also examine participants' sense of community with others both during an extensive training and several months after the training. Finally, I explore how becoming a trained volunteer influences an individual's personal and social perceptions.

Methods

I used a mixed-method approach, combining surveys and interviews of Minnesota Master Naturalist graduates. The Minnesota Master Naturalist Program is a volunteer program that educates adults about Minnesota's natural resources and provides opportunities to take part in local conservation projects (Guiney et al. 2006). A graduate must complete a forty-hour class that focuses on Minnesota natural and cultural history. To maintain active program status, a Minnesota Master Naturalist must participate in eight hours of advanced training and forty hours of approved volunteer service annually.

I used stratified random sampling to identify twelve volunteers to interview from the subgroup of graduates who had recorded volunteer hours to the Minnesota Master Naturalist program in 2007 and started their class by April 2007. I then divided the potential participants into the following categories: sex, residence location, and number of volunteer hours recorded in 2007. Residence location categories include metro (the Minneapolis/St. Paul seven-county metropolitan area) and Greater Minnesota (any

location outside the seven-county metropolitan area). I divided the 2007 volunteer hours recorded into three groups: low (under 39 hours), medium (40-99 hours), and high (100 or more hours). I randomly selected one woman and one man who fit in the following six categories: low hours/metro, low hours/non-metro, medium hours/metro, medium hours/non-metro, high hours/metro, and high hours/non-metro. I was unable to meet with two of the individuals I originally selected, so I completed the sampling plan by contacting additional randomly-selected individuals in the missing categories. While each volunteer is not representative of all volunteers with the same sex and residence location, this approach improved the likelihood that I interviewed a diverse group of graduates. I used a semi-structured interview method, asking the same general questions with variations on the exact wording and follow-up questions. The interviews were recorded in person or on the phone and then transcribed. The interview questions are in Appendix A and additional information about the interviewees is in Appendix B.

I also collected survey data from graduates of the Minnesota Master Naturalist program at three different times: the start and end of a participant's initial 40-hour class and during an annual survey (relevant questions are in Appendix C). Data from the end of class surveys are based on 403 participants who graduated between May 2006 and February 2009. I received 334 responses (83% response rate). The mean value of the two social interaction items is based on comparison of responses from a start and end of class survey. These specific comparison questions were added to the end of class survey in the fall of 2007, therefore these data includes only graduates from November 2007 through February 2009 (n = 170). I received 144 responses for the start survey and 148 for the end

survey (> 84% for each survey). Because I used a paired t-test to analyze these items individually, only participants who completed both the start and end survey are include, and the sample size for these items is smaller ($n \geq 110$). I adapted the wording of these items from validated recreation preference scales (Manfredo, Driver, and Tarrant, 1996).

The annual survey used in this study, conducted in the summer 2008, included all participants who had been graduates for a minimum of six months. This included 285 participants who graduated between December 2005 and 2007. I received 193 responses (69% - five participants had moved out-of-state or were not reachable by email, mail or phone so they were not included in this response rate calculation). I collected most of the survey data electronically using the Survey Monkey website (www.surveymonkey.com) and I mailed paper surveys for participants who did not provide an email address. I used a modified Dillman (2000) technique for creating the questionnaire and corresponding with respondents. I analyzed the quantitative data with SPSS 15 software and the qualitative data with Atlas.ti software using the constant comparison method (Charmaz 2006).

During the analysis of the survey data, I noticed a pattern of some participants potentially reversing the response scale for some questions, i.e. responding “very dissatisfied” when other answers suggested that they meant to respond “very satisfied.” To clarify their response, I sent an email to eight participants asking them to respond again to the satisfaction question in the end of class survey. Seven participants responded that they were “very” or “somewhat satisfied” when previously they marked “very” or “somewhat” dissatisfied. I did not receive a response from one participant so I did not

include this response in the analysis. This apparent scale reversal for all or some of the items also occurred on the social interaction comparison items. For this question twenty-one participants appeared to reverse the scale for some or all of the items, therefore I did not include their responses in the analysis. I suspect that this type of error may be more common with internet surveys because respondents may be accustomed to reading information quickly.

Results

Need for a community

Social aspect of meaningful action

Participants want their volunteer work to make a positive difference to the natural world and they recognize the social aspect of this goal. Even though interviewees were not specifically asked about their views on environmental concerns, they expressed concern about complex, societal environmental problems and recognized that these are societal rather than individual problems. Francie describes one concern, “From when I was in my teens until today I see so much more [of a] throw away [society]… I just see our planet being used up at such a fast rate. Paula emphasized, “It really troubles me that our kids are not getting outside as much as they should be. They may not develop the appreciation and the stewardship of nature that we are going to need if this earth is going to survive.” Tom shared similar thoughts, “If people don’t … assert how as a society …we need [nature], there may be a lot of things that are going to be gone before my children get old enough to realize what they were. And then the opportunity is lost for good.” Brian also mentioned, “Unless kids really grab on to this nature conservation outdoors thing…we

are in trouble because by the time that they are taxpayers …they're not going to want their money to go towards [conservation]." Interviewees also mentioned the lack of funding for natural resource organizations as a concern.

Participants recognize that volunteering is part of the solution and that their work contributes to the environment through a group effort and education. In response to an annual survey question, "How do you feel your volunteer work has impacted or contributed to Minnesota's natural environment?" several survey respondents expressed the importance of a group effort, emphasizing their belief that many individuals each doing a small part can make a significant difference. For instance, one person said, "results of what I specifically do are minimal, I like to think I am a part of a larger group of individuals (Master Naturalists and others) in Minnesota who have a desire to educate, properly use, improve, and protect the natural lands of the state." Participants also mentioned that volunteer efforts help through informal and formal education. Many people mentioned that their volunteering sets an example for others to follow. Others expressed the opinion that education opportunities help people, especially children, increase their appreciation of the natural world. One volunteer mentioned,

> Since completing my Master Naturalist training, I have presented more than one hundred educational programs which I believe impact Minnesota in a positive manner. Helping people, young or old, feel more connected to the natural world is very rewarding.

Another volunteer mentioned,

> I have reached young urban audiences who are generally not exposed to environmental education. Greater awareness in this demographic hopefully helps reduce environmental impacts and creates civic-minded people who will take care of the urban environment and create a healthier place to live.

Social connection as motivating

Both interview and survey responses showed that a connection to other conservation volunteers helps participants stay motivated. In response an annual survey question about motivation, all social interaction items (e.g. to be with people who value nature, to meet new people with similar interests, to network with others) were ranked important (Table 1). Interviewees explained why social interaction was important in several ways. Carol, a lawyer, emphasized

> unless there are people like me, hordes and armies of … volunteers, there's a tremendous amount of conservation work that would not get done...And I'm, I really am proud to be one of the un-named hordes that is, that's doing something [and] not just sitting back and saying, "Oh my gosh, this is an awful problem."

Vanessa explained that learning about environmental issues in college can be depressing, "but then actually being out there volunteering you can see…people out there that…want to get involved and that is uplifting." Francie, a student who is planning to change to an environmentally focused career, finds interacting with conservation-oriented people is important, "so [when] I … go home thinking, 'Why am I doing this? I'm only one person. I'm not going to make a difference, just quit it.' Then I get around more and more people and it's … 'Yeah we can make a difference'."

Savannah, a teacher, mentioned this idea of motivation through social connections in a broader context.

> One of the things I like about Minnesota … is that we do care about our resources, … there are a lot of people that care about our environment…and care about it enough to preserve it and work with it appropriately. And it feels good to be a part of that.

Interviewees also described how social interaction through volunteering keeps them motivated. Brian explained it this way, “anything that takes kids that are not outdoor-oriented and lets them do something outdoors and to see the rewards on those kids’ faces and even the tears when they have to leave. I mean that’s better than any drug that can exist.” Matt shared a similar idea about teaching astronomy, “[When I] see that light click and ‘hey, this is really interesting and fascinating and I want to learn more about this’… I get a real kick out of that.” Rose, who has been a Girl Scout leader for twenty-nine years, said, “It’s fun and … when you have a little girl go, ‘Rose, I learned to do this’. To me that’s really cool.” Francie explained, “Some days … it’s so much easier to stay inside and grumble and moan because it is cold outside but when they call and say ‘Francie we’re going to do this and we need your help’, like tapping St. John’s maple trees, ...It’s like ‘OK, I’m coming, this sounds like fun’. ’’

Community creation during class

Overall volunteers felt a sense of community with the other students and instructors of the Minnesota Master Naturalist class while the class was in session. In the annual survey, 75% of participants felt a moderate or great sense of community with other Minnesota Master Naturalist participants during the class (Table 2). Interviewees also described a strong a sense of community. For example, in reply to a question about whether she felt a sense of community with her Minnesota Master Naturalist class, Francie responded, “Very much, very strong, in fact…we were close to tears when we all disbanded.” Brian, a graduate from a different class responded, “Oh yeah, definitely. I mean it would be hard not too...even though there were distinctly different personalities, [our] interests overlap

so much that there was a quick bond there." Matt, a graduate from another class, expressed a similar feeling, "One of the exciting things about the Master Naturalist course is finding those people that are hard to find sometimes that have similar interests." Other interviewees felt a sense of community, but the strength of this feeling varied. Savannah explained, "I'm not the most sociable person…what really helped were those field trips…Because we were really together for many hours and one was a miserably cold day and to go through that together, that's kind of a bonding experience." Likewise, Rose found it took a while to feel connected: "It was kind of [hard] getting to know them. And of course some of them knew each other…but you know as the class progressed, it got a lot easier."

Participant ratings of several survey questions also illustrated that social interaction during the class was important. In the start of class survey, participants rated the importance of various reasons for choosing to attend the class, and, in the end of class survey, they rated the contributions of the same items to their satisfaction with the class. The mean value of, "meet people with similar interests," increased from 3.91 to 4.24 ($t= 4.382$, $df=111$, $p < 0.001$) on a five-point scale (1=very unimportant to 5=very important). The mean value of the other social interaction item, "be with people who value nature," also showed a statistically significant increase (from 4.1 to 4.3, $t=2.125$, $df=111$, $p = 0.036$).

In addition, in the end of the class survey 74% of participants responded that they really enjoyed the class (the highest ranking for this question) (Table 3), while 60% gave the

question on satisfaction the highest ranking (Table 4), but only 37% gave the question on meeting or exceeding expectations the highest ranking (Table 5). A significantly larger proportion of participants gave the question regarding their enjoyment of the class the highest ranking as opposed to the questions about their satisfaction with the class and whether it met their expectations ($\chi^2 = 85.1$, df = 1, $p < 0.001$ comparing enjoyment to satisfaction; $\chi^2 = 15.13$ df = 1, $p < 0.001$ comparing enjoyment to expectation). While we do not know the reason behind responses to these questions, it is likely that enjoyment of the class is based at least partly on social interactions, as opposed to satisfaction with the class or the class meeting participant expectations. Francie's comments during her interview support this assertion:

> The Master Naturalist class … was just awesome. You know when you're in school as an adult; it's different then when you're in school as a kid. The adults don't mind talking back and making jokes and so our class was so much fun… And the adult [students had]…so much knowledge just from their experience of living...We had such a good time.

After the class, the strong social connections between Minnesota Master Naturalist graduates did not appear to be maintained. In the annual survey, 75% of participants said that they felt a moderate or great sense of community with other Minnesota Master Naturalists during the class. However, only 45% of respondents still felt this sense of community with Minnesota Master Naturalists after the class was over for six months or more (Table 2). Tom mentioned, "I think at the time that I went through the class I felt…a real close sense of community. But I think since the class has disbanded that there really hasn't been much of a community. And so I don't feel very connected any longer." Similarly several annual survey respondents wrote in response to the open-ended sense of

community question that the lack of interaction after the class resulted in them no longer feeling a sense of community.

Sense of community and volunteering

The desire for a continuation of a community after the class with the other Minnesota Master Naturalist participants varied and may correspond to the extent participants feel a sense of community through their volunteer work. Graduates volunteer at a variety of places and they may or may not have regular contact with other Minnesota Master Naturalists. In response to a question about whether they felt a sense of community with people whom they interacted with through volunteer work, most felt some connection, but the extent was variable (Table 6). For example Rose, who has been a Girl Scout leader in a small town for 29 years and reported 206 hours in 2007, felt that her Girl Scout troop was one "big family." Adam, who has volunteered for a camp in northern Minnesota for the last 40 years and reported 130 hours in 2007, felt like his volunteer community was an extended family. He compared the class to school. "It's a thing you go to, to get out of. I don't need another community." In comparison, Tom, who reported 20 hours, found it challenging to find connections in his local area after the class and was searching for a community. Tom may be an example of how a lack of a community made it more difficult to find opportunities and as a result he volunteered fewer hours.

Other participants described other aspects of a sense of community showing the complexity of this concept. Carol, who reported 89 hours, found her sense of connection with fellow volunteers varies in duration and sometimes it occurs just during the event

and other times it last longer. Paula, who started volunteering because of the class and reported 143 hours, described a community that formed through an additional intensive volunteer training,

> It was a great opportunity to network with a group of people that were interested in volunteering at the refuge so we helped each other out and shared information back and forth and [went] to each others' programs…it's been a really nice support system.

In response to a question about whether she continues to feel a sense of community with Minnesota Master Naturalist participants, Paula responded, "I have a sense of community that is larger, it's not as personal as one I have with the people that I [volunteer] with on a more regular basis." Other graduates mentioned on open-end question about sense of community on the annual survey that the volunteer work they do is solo, therefore they do not feel a sense of community.

Another social aspect of the class is how the "Minnesota Master Naturalist Volunteer" title influences personal and social perceptions. In response to the annual survey question, "Please share any additional comments regarding how your nature-based volunteer work and/or Minnesota Master Naturalist volunteer work has influenced your sense of identity." Several respondents wrote that they were proud to be Minnesota Master Naturalist and others noted that the title provided credibility or increased their confidence in volunteering. Interviewees made similar comments, Paula said "it's a valid, authentic program and…[the title] gives validation to what we are doing." Savannah, a language arts teacher with a minimal formal background in the sciences, felt that the title,

> gives [me] more motivation and confidence to put myself forward…I was concerned that I would [not] be physically-able [or] knowledgeable [enough to

> help]...and I'm pleasantly surprised that…no matter how [much a] beginner you are, they want you out there helping and it is appreciated...Like seed gathering, I don't know prairie seeds. But I go and she explains and she shows me and it's great.

However, like many other respondents on the annual survey, Savannah felt somewhat intimidated by the "Master" part of the title and was concerned that other people "might think I know more than I do." Many participants in the annual survey and interviews also mentioned that other people, including those who are unfamiliar with the program, are impressed with the name, and feel that the title can help them find volunteer opportunities. In addition, participants mentioned that the title is a credential and it helps legitimize their knowledge and skills. Paula described it this way "it's a valid, authentic program and…[the title] gives validation to what we are doing." Many survey respondents and interviewees also mentioned they were proud of becoming a Minnesota Master Naturalist Volunteer and want the program to succeed and grow. For instance, even though they weren't asked specifically, several interviewees mentioned that they often wear clothing with the logo in order to promote the program.

Discussion

Need for a community

Volunteers recognize the social aspects of environmental problems and want to improve these problems through their work. Pretty and Ward (2003) explain that social capital from social bonds and norms can help create environmentally sustainable communities. In this study, volunteers' comments often related to social norms and interactions. Volunteers mentioned the importance of setting an example for others to follow and this

can influence social norms. Volunteers also mentioned their hope that environmental education will have a positive influence on environmental attitudes and behavior, especially of children, and that this influence may change future societal norms. The concept of social capital also supports the idea that volunteer motivation increases when they know others are volunteering, people are more likely to participate in collective efforts when they are confident that others will also contribute (Coleman 1988).

Community creation during class

The strong sense of community felt by a majority of participants during the class may be a result of shared environmental values. An essential element of community includes need fulfillment (McMillan and Chavis 1986). McMillan and Chavis (1986) explain that one reason people join groups is to fulfill needs; once basic needs are met people prioritize their additional needs through their personal values. As a result, when people with shared values interact they find they share similar needs and priorities; this commonality helps group cohesion (Cohen 1976; Doolittle and McDonald 1978). Effective communities are also able to help people connect in a manner that allows individuals to meet needs of others while they meet their own needs (Zander et al. 1960). Participating in the initial class allowed most participants to satisfy their need to learn about nature and share this passion with other participants. Both class learning and volunteering are examples of activities where participants can meet the needs of others while meeting their personal needs. The importance of social interaction during the class may have surprised some participants and this is illustrated by the increase in the rankings of social interactions items from the start and end of class surveys. Interacting

with other participants who share similar values may result in participants really enjoying the class and meeting social needs that were previously unrecognized.

The class and program activities also fulfilled the three other essential community elements (membership, influence, and shared emotional connection) defined by McMillan and Chavis (1986). Membership involves a personal investment that results in a feeling of belonging to a group (Aronson and Mills 1959; Buss and Portnoy 1967). A common symbol system can help identify community members and maintain a sense of the community (Nisbet and Perrin 1977). A sense of community appeared to be accentuated by the investment of time and feeling of earning the title “Minnesota Master Naturalist Volunteer” by the end of the class. The program symbols -- including the logo, name tag, clothing, and pins -- function as a common symbol system and may help increase a sense of community.

The influence aspect (McMillan and Chavis 1986) involves both conforming to group norms (Kelley and Volkart 1952; Kelley and Woodruff 1956) and influence over the group by individual members (Zander and Cohen 1955). The consensual validation construct can help make sense out of these potentially opposing forces. This construct assumes that people have a need for feedback; they want to know if their personal experience is similar to what others experience (McMillan and Chavis 1986). This feedback can reassure individuals that their experiences are real (Backman and Secord 1959; Byrne and Wond 1962). Although this may not have been part of their main motivation for taking the class, participants did indicate that they gained benefits from

being around like-minded people and experienced positive feedback from this social interaction. The experience of being with people with a similar passion for nature, in a society that often ignores the non-economic benefits from nature, appeared to help validate their values. The overall class structure may make it challenging for individuals to have influence over the class, but time exploring in nature often creates unexpected moments where participants share their knowledge. For instance, it is common to stop and enjoy a wildlife sighting while on a nature walk. Therefore, naturalists often encourage participants to point out wildlife and share their knowledge with others. These experiences may enhance the participants' feeling of having some control over the class.

The shared emotional connection aspect describes the bond participants feel and important components of developing this connection. One element is a shared history, including events that participants have experienced and events that participants have not directly participated in but they can relate to. The community bond can be increased by both frequency of contact (Festinger 1950; Sherif et al. 1955) and positive experiences (Cook 1969). The strong sense of community in the initial class may have been influenced by participants meeting frequently and the shared positive experiences, especially time in nature.

Sense of community and volunteering

After the initial class, participants have a continued opportunity for community with other Minnesota Master Naturalist participants, but for many the strong sense of community they felt during the initial class did not continue. The lack of frequent

interaction is likely one of the main reasons that this changed. Even though the sense of community is not as strong, many still feel a part of a group that is working to achieve similar goals. The continued sense of community is likely to be enhanced by the participants' shared history, which includes participants from different classes. The nametag, clothing with the logo, and annual volunteer pins also serve to enhance a sense of community by identifying participants as Minnesota Master Naturalist volunteers and providing a public expression of their passion for the natural world.

Creating opportunities for participants to continue to interact after the class may help maintain a sense of community and may help maintain or increase volunteer hours. Master Naturalist programs in other states use a chapter-based approach for the initial training and participants continue to meet as a chapter after the class (Guiney et al. 2006). This approach may result in maintaining a stronger sense of community after the initial class. The Minnesota Master Naturalist program is currently developing chapters for graduates to participate in once they complete the initial class. In addition, the program hosts an annual conference for graduates to develop skills and socialize (Guiney et al. 2008). A future study assessing the impact of chapters and annual conference on participants' sense of community could be a valuable contribution.

Future research and limitations

I examined how social context, including sense of community, influences conservation volunteer motivation. As an initial study of this concept in this context, most of the data are broad and exploratory. Future research could aim to better specify and potentially

quantify the concept of a psychological sense of community into a psychometric scale for the specific use of understanding volunteer motivation. This would involve developing items to measure multiple components of this concept. An instrument measuring a psychological sense of community may allow researchers to discover multiple aspects of this concept and if/how it varies within an individual (i.e., does a psychological sense of community or do certain components of a psychological sense of community vary for an individual in different situations?), or between individuals (i.e., does the measurement of this concept correlate with the number of hours a volunteer records?) A limitation of this study is that all the data came from volunteers participating in one program. Future research could determine to what extent individuals in different programs have similar experiences and this would help test the generalizability of these findings.

Recommendations

I have five recommendations to help program managers enhance volunteer experiences and training. First, encourage people to participate in volunteer programs that include intensive class training because the class component helped volunteers develop a sense of community. Second, share with participants how volunteers have benefited the environment (i.e., before and after pictures of a restoration, examples of education efforts, total volunteer hours). This information may help maintain or increase volunteer hours because people are more likely to participate when they know others are participating. Third, provide opportunities for volunteers to interact socially at volunteer training and/or work events (i.e., provide name tags; include time for introductions; include “get-to-know-you” activities; include unstructured time to talk). These activities can increase

social interaction and may help build a sense of community. Fourth, provide opportunities during volunteer training for participants to share their conservation values through discussion (sample topics include current events, volunteer motivation, and special natural places). These opportunities may help strengthen volunteers' sense of community through the recognition of shared values and interests. Finally, facilitate ways to allow volunteers to interact in person or over the internet on a regular basis (e.g., additional training, chapters, annual conference, book club, chat group). Frequent interaction may help maintain or strengthen volunteers' sense of community.

In conclusion, many conservation volunteers viewed environmental problems as societal problems and may be motivated by knowing others are volunteering. An extensive training class was a good opportunity for participants to build a sense of community. Shared environmental values may be one of the more important aspects of building a sense of community for conservation volunteers, therefore providing opportunities for participants to discuss their values may help strengthen their sense of community. After an intensive training class, the strong sense of community diminished, likely due to a lack of frequent interaction. After the class, individuals have a varying desire for a continued community with the class and some participants feel a sense of community with others with whom they interact through their volunteer work. Creating opportunities for participants to continue to interact after the class may help maintain a sense of community. This connection to community may ultimately help maintain or increase participants' volunteer work hours.

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Table 1. Minnesota Master Naturalist graduate ratings for reasons they volunteer. Mean values from a five point scale (1=very unimportant to 5=very important)*

Reasons to volunteer	**Mean**	**S.E.**	**Tukey Group**
To learn more about nature*	4.82	0.0704	A
To be close to nature*	4.71	0.0706	AB
To be outside in a natural area	4.69	0.0704	AB
To give something back to nature	4.59	0.0709	AB
To have fun	4.49	0.0706	ABC
To improve natural areas	4.48	0.0704	ABC
To educate others about conservation**	4.45	0.0706	BC
To educate others about nature**	4.45	0.0706	BC
To help others develop a stewardship ethic*	4.41	0.0706	BC
To be with people who value nature**	4.20	0.0704	CD
To meet new people with similar interests**	4.08	0.0706	D
To get exercise*	3.93	0.0709	DE
To get away from the usual demands of life*	3.92	0.0714	DE
To network with others	3.68	0.0711	E
To develop skills to change careers to a nature-related career	2.82	0.0711	F
To benefit your career	2.67	0.0711	F

* Response to annual survey question, "Please rate each of the following reasons for your participation in nature-based volunteer work." n=144 to 148 depending on the item. **item worded the same as recreation preference scales *** item wording modified from recreation preference scales. (Manfredo et al. 1996). All items followed by the same letter are statistically indistinguishable at the 0.05 level of confidence, Tukey HSD All-Pairwise Comparisons Test.

Table 2. The extent that graduates feel a sense of community with Minnesota Master Naturalist program participants

	During the class*	Six months or more after the class**
Not at all	1.9%	19.0%
To a slight extent	22.8%	36.1%
To a moderate extent	49.4%	32.3%
To a great extent	25.9,.%	12.7%

***** Response to annual survey question, "To what extent did you feel a sense of community with Minnesota Master Naturalist program participants during your initial 40-hour class?" n=158 ****** Response to annual survey question, "To what extent do you currently feel a sense of community with other Minnesota Master Naturalist program participants" n=158

Table 3. Participant enjoyment of the initial class*

I didn't enjoy this class at all	0%
I didn't enjoy this class much	2%
Neutral	3%
I somewhat enjoyed this class	21%
I really enjoyed this class	**74%**

***** Response to end of class survey question, "To what extent did you enjoy this class?" n=306

Table 4. Participant satisfaction of the initial class*

Very dissatisfied	2%
Somewhat dissatisfied	4%
Neutral	5%
Somewhat satisfied	29%
Very satisfied	**60%****

* Response to end of class survey question, "How satisfied were you with this 40-hour class?" n=306
**$\chi^2 = 85.1$, df = 1, $p < 0.001$ comparing enjoyment to satisfaction

Table 5. Participant expectation rankings of the initial class*

Less than I expected	16%
About what I expected	47%
Exceeded my expectations	**37%*****

* Response to end of class survey question, "How well did this class meet your expectations?" n=306
*** $\chi^2 = 15.13$ df = 1, $p < 0.001$ comparing enjoyment to expectation

Table 6. The extent that graduates feel a sense of community with the people they interact with through their volunteer work.*

Not at all	2.5%
To a slight extent	28.7%
To a moderate extent	43.3%
To a great extent	25.5%

***** Response to end of class survey question, "To what extent did you feel a sense of community with the people you interact with through your volunteer work" n=157

Chapter 4. Master Naturalist: A multiple state natural history education and community service program

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ABSTRACT

Master Naturalist Programs across the United States are providing new opportunities for adult volunteers to learn about their state's natural history, environment, and conservation issues. Master Naturalist programs also promote nature-based community service by citizen volunteers and provide continuing education opportunities. We describe four well-established programs—in Texas, Missouri, Florida and Minnesota—that provide successful models for providing adult environmental education and citizen volunteer opportunities. While these programs differ in the make-up of project teams, the relative amount of state versus chapter control over the programs, and whether or not volunteer service is required, all include common components of quality instructional materials and a state-wide support organization. A newly-established national coordinating organization, the Alliance of Natural Resource Outreach and Service Programs, is helping additional states develop new programs and providing a venue for sharing information among existing programs.

INTRODUCTION

Master Naturalist is a natural resource education and community service program that increases environmental literacy and conservation action. Master Naturalist programs address a growing need to connect people to nature (Main 2004). There is an increasing trend of humans living in urban areas (UN 2001) and urban areas support

fewer native species. This trend reduces opportunities for people to interact with, benefit from, and appreciate native species and natural areas (Turner 2004). The Master Naturalist program addresses people's need to connect with nature through learning and volunteer opportunities that promote conservation action.

Here, we explain the essential features and variations of this program by highlighting examples in Texas, Missouri, Florida, and Minnesota. We also describe a national effort to promote Master Naturalist programs in other states.

MASTER NATURALIST PROGRAMS: COMMON ELEMENTS

All Master Naturalist programs include educational opportunities for adults, community service, and a statewide network that facilitates the program. The initial training consists of a forty-hour course that incorporates lectures and active learning, including field trips to local natural areas. Advanced training classes on a variety of natural history and interpretation topics are available after a participant has completed the initial course.

Master Naturalists use their knowledge in nature-based, volunteer community service that is either encouraged or required. Volunteer service fits into four categories. 1) Citizen science involves collecting data for scientific research such as collecting water quality data or participating in a Christmas bird count. 2) Program support involves assisting a nature-based organization in activities such as building a boardwalk or organizing digital photographs. 3) Interpretation involves educational activities, such as designing a brochure or leading a nature walk. 4) Stewardship involves conservation-based land management projects, such as removing invasive species, planting native species or assisting with a land management plan.

Programs also include two main statewide partners, one with a natural resource focus and another with an education focus. The natural resource partner is often an agency that manages natural resources, such as the Texas Parks & Wildlife Department, the Missouri Department of Conservation, and the Minnesota Department of Natural Resources. The education partner is often a university-based cooperative extension service. In addition, numerous local partners assist in education and service opportunities.

Existing Master Naturalist programs use one of two models to conduct the initial training, the chapter-based and the instructor-based. In the chapter-based approach, individuals in a single geographical region organize a Master Naturalist chapter. Local chapters, with assistance from advisors (at least two statewide partner employees), conduct initial training sessions and provide volunteer service opportunities to their members. Chapters receive guidance from the state organization, including training guidelines, program marketing, curriculum resources, and advanced training opportunities. The instructor-based approach includes more direct state organization involvement in the initial training. Instructors from nature-based centers throughout the state attend a two-day training session that familiarizes them with the program. This "train-the-trainer" workshop introduces instructors to the required curriculum and a variety of teaching tools (PowerPoint presentations, videos, instructor manuals, and student workbooks), and connects them to the support services offered by the statewide program, such as marketing and components of a program website. After completing the training, instructors organize classes at their nature-based centers and the state organization coordinates class registration.

SAMPLE MASTER NATURALIST PROGRAMS

The Texas program, started statewide in 1998, uses the chapter-based training approach (Haggerty 1999). The Texas Master Naturalist mission is "to develop a corps of well-educated 'Master Volunteers' to provide education, outreach and service dedicated toward the beneficial management of natural areas and natural resources within their communities for the state of Texas." Partners include the Texas Cooperative Extension, Texas Parks and Wildlife Department at the statewide level, and over 270 local partners. At the state level, the organization is directed by an advisory committee and a volunteer representatives' committee that represents chapter interests. The program currently supports over 4,000 Master Naturalist volunteers in 35 local chapters across the state. Texas Master Naturalists are required to volunteer for 40 hours and participate in eight hours of advanced training annually; these volunteers have provided over 492,000 hours of service valued at more than $8.5 million*. This service has resulted in 75,000 acres of enhanced wildlife and native plant habitats, and has reached more than 1 million youth, adults and private landowners. Of particular note among all of these efforts is the discovery of a new plant species by a program volunteer.

The Missouri Master Naturalist™ program initiated courses in 2004 and has a chapter-based training structure. Its mission is "to engage Missourians in the stewardship of our state's natural resources through science-based education and community service." Statewide partners include the Missouri Department of Conservation, and the University of Missouri Extension and School of Natural Resources. Statewide partner employees are responsible for conducting the initial training with volunteers support. At the end of 2006, the program supported 285 Master Naturalists in seven chapters. As in Texas,

Missouri Master Naturalists are required to volunteer 40 hours and participate in eight hours of advanced training per year. They have contributed over 8,000 hours of service through 2006, valued at more than $144,000*.

The Florida Master Naturalist Program™ (FMNP) initiated courses in 2001 and uses an instructor-based training approach (Main 2004). The mission is "to promote awareness, understanding, and respect of Florida's natural world among Florida's citizens and visitors." The program, developed and overseen by the University of Florida Institute of Food and Agricultural Sciences, includes three 40 hour ecosystem-based initial courses: Freshwater Wetlands, Coastal Systems, and Upland Habitats. FMNP courses include complete educational curricula and are taught by a network of 150 trained instructors representing 90 organizations. The instructors have trained over 2,500 Master Naturalists. The courses attract professional audiences (e.g., teachers, park rangers, consultants) and they constitute 12-32% of FMNP graduates each year. Unlike Texas and Missouri, volunteer service is not required but averages >13,000 hours annually.

The Minnesota Master Naturalist program benefited from the input of Texas and Florida program organizers, and a needs assessment that included input from professional naturalists and environmental educators (Savanick and Blair 2005). The program initiated courses in 2005 and includes aspects of both the chapter and instructor-based program model. The mission is "to promote awareness, understanding, and respect of Minnesota's natural environment by developing a corps of well-informed citizens dedicated to conservation education and service within their communities." Statewide partners include the University of Minnesota Extension Service and the Minnesota

Department of Natural Resources. The National Science Foundation has provided funding to support the development of the program over five years. The initial training is similar to Florida's instructor-based approach with train-the-trainer courses and state-wide curriculum materials. Also like Florida, Minnesota has three biome focused 40 hour courses: the Deciduous Forest, Prairie, and Coniferous Forest. The program will develop chapters for Master Naturalists to join after they have completed the initial training. In its first year, 135 Master Naturalists and 44 instructors have completed courses. Minnesota Master Naturalists are required to complete eight hours of advanced training each year. Also Minnesota Master Naturalists are required to volunteer for 40 hours per year, and have contributed over 5,965 hours of service, valued at $107,000*.

The Texas and Florida programs, currently the largest of all state Master Naturalist programs, have attracted national attention. More than 25 states (see www.nralliance.org for more specific information) have started or are developing Master Naturalist or similar programs. The Alliance of Natural Resource Outreach and Service Programs was recently established to help states develop programs and provide a venue for sharing information between states. The Alliance has been coordinating an annual conference since 2005.

Individuals or organizations interested in developing new state Master Naturalist programs have a growing pool of resources from which to draw. The Alliance website (www.nralliance.org) provides information on whether a program already exists, or if one is being developed in a specific state. Another way to learn about developing a program is to contact individuals associated with existing programs. Contact information for the programs described above is available on state websites (Texas:

http://masternaturalist.tamu.edu; Missouri: www.monaturalist.org; Florida: www.MasterNaturalist.org; Minnesota: www.MinnesotaMasterNaturalist.org). A valuable first step in developing a new program is putting together a strong partnership; potential partners include university departments and extension services, and state departments that manage natural resources. Other potential statewide or local partners include nature centers, museums, zoos, and botanical gardens.

CONCLUSION

Master Naturalist programs have been tremendously successful due to the strong interest people have in learning about the natural world and what they can do to conserve it. Clearly, the combination of education and service benefits both the natural and human communities. In addition, participants gain personally as well, as illustrated by the following quote from a Minnesota Master Naturalist: "This may sound really hokey, but taking this class changed my life. I feel like a different person. I feel more in line with who I am for having re-established my connection in a concrete way with the natural world. The natural world is key to my mental, emotional and spiritual health."

*Independent Sector calculation of volunteer time is $18.04 per hour for 2005. http://www.independentsector.org/programs/research/volunteer_time.html

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Chapter 5. Assessing the need for Master Naturalist programs

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Abstract: We present a focus group-based needs assessment for a Master Naturalist program that would increase environmental education capacity in our state using trained volunteers. This assessment explored the potential benefits, challenges, and structure of the program. We conclude that the program would fill an existing need by providing research-based information on environmental issues; we should collaborate broadly with other environmental education programs; the program must become financially self-sufficient after initial supported development; and we need to work with environmental education professionals in the state to ensure the program does not infringe on their job security.

Introduction

Woodland Advisor, Master Conservationist, Tree Care Advisor--many successful Extension programs combine education and community service. The prototype for these is the Master Gardener program, which was started in 1973 and now has programs in all 50 states and four Canadian provinces (Schrock, 1998). In Minnesota alone, the Master

Gardener program has a substantial level of involvement, with more than 2,000 active Master Gardeners, each volunteering a minimum of 25 hours a year for a collective 75,000 hours of service (Kurtz, 2002).

Can this combination of education and service be used to increase the capacity of Extension to offer environmental education programming? Many state Extension services currently are exploring this question with the intent of developing Master Naturalist programs.

Notably robust programs already exist in Texas and Florida. The Texas Master Naturalist program organized at the state level in 1998 as a partnership between Extension and Texas Parks and Wildlife. This program operates through 18 local chapters with more than 1,665 volunteers that have provided more than 163,500 hours of service (Haggerty, 2002). Another impressive program, the Florida Master Naturalist, has taken a distinctly different approach, with instructors trained at the state level who have, in turn, trained more than 800 Master Naturalists in Florida since 2001 (Main, 2003).

Since 2002, we have been exploring ways to extend environmental science education and wildlife programming to an increasingly suburban population. The success of the Master Naturalist programs in Texas and Florida led us to assess the feasibility of initiating a similar program in our state. While these efforts have been focused exclusively on Minnesota, the lessons we have learned are applicable to anyone considering implementing a state-wide Master Naturalist program.

Initially, we completed a nationwide inventory of Master Naturalist programs and conducted telephone interviews with Regional Extension Educators in Minnesota who specialize in environmental science education. After recognizing the impressive results in other states and the potential benefits to Minnesota, we conducted a needs assessment utilizing three focus groups comprised of participants who are environmental educators and natural-resource professionals. We based our methodology on two helpful publications: Etling (1995) and Krueger (2000).

Objectives

We had four objectives for the focus-group needs assessment:

1. To identify potential benefits of, and partnerships for, developing a Master Naturalist program.
2. To brainstorm potential community service activities for Master Naturalist volunteers.
3. To discuss requisite training to implement service activities.
4. To identify potential challenges in program development.

After addressing these objectives, we could assess the overall need for, and feasibility of, a Master Naturalist program in our state.

Methods

The focus group-based needs assessment included environmental educators, naturalists, and land managers in state agencies, county governments, and non-governmental organizations. Of the approximately 50 people contacted, 22 agreed to participate in the focus group sessions. Before attending these sessions, attendees were asked to complete a questionnaire to assess their initial thoughts about a Master Naturalist program as well as to provide written feedback that might not otherwise arise during the dynamics of a focus group.

The participants in the three sessions included seven Department of Natural Resources (DNR) employees involved in volunteer service and education, six Extension educators, four individuals who work for non-profit groups, three who work at nature centers, and two county employees involved in management and interpretation. Six to 10 people participated in each session.

Overall, the participants had more background in education than in restoration, management, or research. Two restoration and research organizations were invited the DNR Ecological Services (Scientific and Natural Areas) and The Nature Conservancy, but they were unable to send representatives. Nineteen participants worked in the Saint Paul/Minneapolis seven-county metropolitan area, whereas three worked in outlying rural areas of the state.

At the start of each session, we delineated two broad structural requirements for the program:

1. To advance the University Extension mission of "connecting community needs and University resources" within the field of natural resources/wildlife and
2. To include a training and service component similar to that used in numerous Extension programs, including Master Gardener.

We left open other expectations for the program in order to generate as many ideas as possible from the knowledge collectively held by the focus-group participants. We recorded information during the focus groups and collected the written responses from the previously mailed questionnaire at the end of each focus-group session. Some participants chose to make additions to these questionnaires during and after the focus-group sessions.

Findings

Overall, participants identified a need for Master Naturalist programming. Participants' comments included "I'm really glad you're doing this," "I'm excited about the possibilities," and "Overall, I think this is a great idea. Especially with budget cuts, there is a huge need for this. I think there are a lot of people who will be interested in volunteering with this program." Below are the findings from individual objectives of the needs assessment, based on both the written questionnaires and the focus-group sessions.

1. Benefits and Partnerships

The first area explored in the focus group sessions was the potential benefits of creating a Master Naturalist Program and of potential partnerships with other groups involved in environmental science education and stewardship.

Participants emphasized the benefit of connecting an increasingly suburban population to nature. One participant stated that this education/service approach would "help local communities understand and care for the natural world." Another participant said, "If we train volunteers, give them the support they need, and create meaningful opportunities for them, they will work in partnership with us and allow educators to reach more of the population." Many participants echoed this opinion and said that a Master Naturalist program could generate new energy and enthusiasm for the natural world at a community level. One participant mentioned, "It's helpful to have folks out there . . . at the grass roots."

Another major benefit emphasized by the participants was that the Master Naturalist program could become a consistent science-based source of reliable information. A participant emphasized that in this information age, "having unbiased information versus an environmental group with an agenda" is important.

Many participants mentioned that partnerships and collaboration with other programs would help build a successful program; for example, "I think it's really important that this program works with other similar programs" and "joint promotion of programs, volunteers from different programs can/should team-up on projects."

2. Activities

The first half of the focus group also covered specific activities that could be supported by a Master Naturalist program.

Generally, participants identified activities centering on interpretation, restoration, research, and policy participation. Interpretation included a variety of activities ranging in size from one-on-one conversations to large-group presentations and a range of venues, including K-12 schools, community centers, camps, nature centers, nursing homes, parks, fairs, and public events.

The participants also identified other potential audiences, including scouts, historical societies, tourism businesses, and conservation groups. Specific examples from participants included "In forestry, there's a lot of interest now in plant identification for ecosystem classification--help with these programs would be great;" "[State] Parks used

to have a strong post secondary [education] role. This might help fulfill that goal;" and Master Naturalists could "help create signage and brochure content around the state."

Interpretation was not regarded as the only area that could benefit from a Master Naturalist program. Participants also emphasized land stewardship. They thought that restoration projects, development of species lists, inventories, monitoring programs, and citizen-science projects all would benefit from trained volunteers. Additionally, they thought Master Naturalists could become involved in local land-use decision-making by attending city, county, and state public meetings on local environmental issues. One participant mentioned that Master Naturalists could "assist in long-range, open-space policy direction." Another mentioned the program could result in "connecting [local] communities to their [local] natural resources."

3. Training

The third topic in the focus groups centered on the training that would be necessary for a Master Naturalist.

In-depth Training: More Training or More Volunteers?

Participants emphasized the need for volunteers with in-depth training. On the questionnaire, participants were asked if their program would benefit from more volunteers with less training or fewer volunteers with more training. Eleven of 13 respondents preferred fewer volunteers with more training, and two preferred more volunteers with less training.

During the focus group session, participants again emphasized in-depth training. "The need we have is for people who actually know what they are talking about and can interact with the public (school and civic groups) in a professional manner." We need "a few, highly committed [volunteers] that could do high-quality programming."

Training Emphasis: Interpretation or Natural History?

We asked participants to rank the importance of three training areas: "interpretative skills," "natural history knowledge," and "other (please list)," with a percentage emphasis summing to 100. The percent apportionments for natural history knowledge ranged from 15 - 50%, interpretative skills from 20 - 60%, and the "other" from 0 - 40%. "Other" included current environmental issues, environmental education theory, and applied skills.

Participants' views on the training priorities varied considerably. The difference of opinion in this area led to the suggestion that a Master Naturalist program should develop two different tracks: 1) teaching and 2) stewardship. This would allow different Master Naturalist volunteers to pursue their individual interests and would attract more people to the program. One participant indicated that some people would be more suited for working on restoration projects, while others would prefer teaching.

4. Challenges

The fourth objective of the focus-group sessions was to identify challenges in bringing a statewide Master Naturalist program to fruition.

Defining a Master Naturalist

Many participants suggested it will be a challenge to define the depth and breadth of the program from the broad spectrum of topics that could be included as natural history/environmental education. Some were afraid that the training program would be too long or contain too much content for "volunteers," whereas others were worried about insufficient coverage of any topic.

Statewide Logistics and Finances

A few participants pointed out that developing an efficient infrastructure to manage a statewide program would be an enormous task. They stated that maintenance of a statewide infrastructure would be expensive and stressed that the program would need to be financially self-sufficient. Many participants emphasized that the support structure for the program should be established before the program begins. One participant shared, "Don't do the training until the support network is in place." Another participant noted it is "important to have a strong level of support for your volunteers so they have a dependable resource when complex questions or situations arise."

Consistent, High-Quality, Research-Based Programs

Ensuring that the Master Naturalists provide consistent, high-quality programming is challenging. Overcoming personal bias of volunteers is difficult. One participant emphasized that "quality is key here--if you are expecting people to accept your program, you have to assure quality of the volunteers and what they can deliver."

Potential Public Misperception of the Name "Master Naturalist"

Several participants were concerned that the public would not realize "Master" Naturalists were volunteers and may think Master Naturalists have more training and experience than a "professional" naturalist working at an interpretive facility. If the quality of programs delivered by Master Naturalists is low, it may negatively impact the environmental education profession as a whole.

One participant explained this by stating, "The real concern comes with the label of 'Master Naturalist' being bestowed on a person who may have taken classes but may not be able to teach and thereby work against the public's view of professional naturalists." Another participant commented, "This name implies that these people actually hold some sort of degree or are better then just a regular old naturalist (who typically has at least an undergraduate degree in the field if not a Masters degree)." "Please consider changing the name to 'Volunteer Naturalists' if you are going to do this program--call these people what they really are." Another participant said, "The word 'Master' has unintended implications. How about 'Community Naturalist'?" Another remarked, "Please consider changing the name or I cannot endorse this program."

Suggestions to minimize or eliminate potential public misperceptions included clarifying the volunteer role. Also, several participants emphasized that volunteers should be linked to professional programs and the volunteer role was to "enhance an existing professional program" or "assist" professionals rather than lead programs. Alternative program names included Master Conservationist, Master Volunteer Nature Educator, and Master Nature

Advisor. A final suggestion was to always refer to the people in the program as "Master Naturalist Volunteers."

Potential Job or Revenue Competition

During our initial contacts with potential focus-group participants, it became apparent that many professionals in the interpretive field were worried about competition from Master Naturalist volunteers. Consequently, we asked each participant to rank on the written questionnaires their concern that trained volunteers may compete for jobs and/or replace professional naturalists and environmental educators.

Of 18 responses, three had "low concern," seven "medium concern," and eight "high concern." One participant mentioned that this concern would vary in different regions of the state. "There are hot spots in the state where this issue is of high concern," while in other regions the program "would be very welcome." Some participants shared that their concern was low because "there's a need for professional staff," "volunteers can't do it all," and "volunteers are not 'free.'"

Participants emphasized that adequate resources must be devoted to coordinating volunteers and that there is no substitute for professional staff. In addition, one participant commented that "we can't get staff, so they don't replace anyone [consequently we need the extra help]." We speculate that the difference in responses depended on a participant's location in Minnesota and whether Master Naturalist volunteers could be viewed as a threat to job security in that location.

Those with high concern mentioned job and revenue competition. One participant emphasized:

This is a HIGH concern. We have lost 21.85 (65%) of our professional interpretive positions in Minnesota State Parks since Fiscal Year 2001. This represents a significant impact to what was considered by many to be one of the better interpretive naturalist program efforts in the state and country. We are also concerned about the political discussions on the national and state level about replacing park interpretive naturalist with volunteers. There is potential that Master Naturalist programs could hasten the demise of the profession.

Others were concerned that free services provided by volunteers to school groups would be a source of competition for revenue because school programs currently help support several fee-based nature centers. One suggestion to reduce revenue competition was to allow Master Naturalists to charge for certain programs that they were doing for interpretive facilities, thus providing a revenue source for their sponsoring institution.

Recommendations

1. Pursue Development of the Program

Overall there was enthusiasm for the Master Naturalist program and its niche in the environmental education structure of Minnesota. The list of potential benefits is exciting, and the potential challenges do not appear insurmountable. Program development and

conceptualization should be done through a group containing broad representation of potential collaborators and concerned parties.

2. Coordinate with Other Programs

A Master Naturalist program should seek out opportunities to partner and collaborate with other programs in its state. It should investigate opportunities to link training, advertising, and marketing efforts with similar programs. It should also develop its own niche to reduce concerns of competition and focus on how it can add value to existing educational programs.

3. Communicate with Environmental Education Leaders

The program should provide opportunities for communication with local and statewide environmental education leaders. It should provide a forum to review the effectiveness of the program and collect and process ideas for improvement.

4. Establish Financial Self-Sufficiency

A Master Naturalist program should be financially stable after its initial development costs are covered through a grant. The program should involve as many partners as possible to aid this financial goal, especially in writing grant requests.

5. Provide Accurate, Research-Based, High-Quality Programming

The information provided to participants and the public should be non-biased, consistent, and scientifically accurate. It will be important to train Master Naturalists on how to obtain and present this information.

6. Consider Alternatives to the Name "Master Naturalist"

Because several focus group participants were concerned about the connotations of the name "Master Naturalist," we need to evaluate options to address these concerns. An advantage of keeping the name is recognition of the well-known Master Gardener program and the well-established "Master Naturalist" programs in Texas and Florida. Changing the name is an option, but another alternative would be to continue to use the name "Master Naturalist" while communicating the purpose of the program clearly and consistently referring to participants as "Master Naturalist Volunteers."

7. Be Aware of Possible Job Competition

The program should be sensitive to the concern that a Master Naturalist program could create job competition and reduce the number of professional positions in natural history interpretation and environmental education. We should investigate methods to avoid loss of jobs or revenue in the field. Ideally, the Master Naturalist program should to assist professionals and raise awareness of the need for additional professional naturalists and environmental educators.

Conclusions

The focus-group approach was successful in defining the benefits, concerns, and potential niche for a Master Naturalist program in our state. The sessions generated enthusiasm by discussing potential benefits and identified potential partners for the program. Some opinions shared by participants were surprising to others in the group, and the discussion format allowed for a more complete understanding of these differing viewpoints. The focus group format efficiently gathered diverse opinions and allowed environmental leaders to engage in a broad discussion of the idea. We look forward to utilizing the insights gained in the focus groups to develop a dynamic, collaborative, and effective program in our state.

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Appendix A. Interview questions

Conservation volunteer experience

Introduction question
Briefly describe your experience with nature-based volunteer work.

How long have you been involved in nature-based volunteer work?

Initial involvement
What originally got you involved in conservation volunteer work?

What inspired you to get involved? What initially motivated you?

Describe a favorite project or volunteer work experience. What did you like about it?

Motivation
What currently motivates you to do nature-based volunteer work? To what extent has family (i.e., children, spouse) been an important influence? To what extent has your career been an important influence?

What sustains your interest in nature-based volunteer work? Why do you continue to be involved in conservation volunteer work?

What do you value about your conservation volunteer work?

What do you see as the personal benefits of being involved?

Has your interest in conservation volunteer work changed over time? If so, please describe.

Have there been any changes in your interest in conservation volunteer work that surprised you?

Have you felt appreciated for your work? If so, please describe.

Have you felt recognized for your work? If so, did this influence your motivation?

Challenges

What challenges or difficulties have come up with your volunteer work?

Are there specific constraints that limit the type or amount of work that you do?

Other volunteer work

Currently or in the past have you been involved with other volunteer work that is not nature-based? If so, please briefly describe.

Is your motivation and interest in non-nature-based volunteer work different than your nature-based work? Please elaborate.

Are the personal benefits you receive different for each type of volunteer work similar or different? Please elaborate.

Connection to the natural world

To what extent do you feel a connection to the natural world?

What influences how connected you feel to nature?

Does this feeling of connection to nature change over time? Is this feeling affected by where you are (i.e., in a natural area or urban area)?

Is a connection to nature a general feeling or specific to particular places or both?

Is your feeling of a connection to nature influence by what you are doing?

To what extent has your conservation volunteer work affected your connection to the natural world? Can you give an example?

Does your feeling of connection/or lack of connection to nature affect other aspects of your life? Please explain.

Sense of community with other people

Do you feel a sense of community with the people or organizations where you volunteer?

To what extent do you feel a sense of community with Minnesota Master Naturalist program participants?

Did you feel a sense of community with Minnesota Master Naturalist program participants during the initial class? Please describe.

Have you interacted with class participants since graduation? Please describe.

What influence did the Minnesota Master Naturalist initial class have on your conservation volunteer work (e.g., your motivation, feeling of preparation to volunteer)?

Do you currently feel a sense of community with other of Minnesota Master Naturalist program participants?

Have you met/interacted with graduates from other classes? Please describe.

Have you been involved in any additional classes (Minnesota Master Naturalist advanced training or other classes, events) since your initial class? If so, have the classes influenced or supported your conservation volunteer work?

Do you feel a sense of identity as a conservation volunteer?

Do you feel a sense of identity the Minnesota Master Naturalist program?

Has the title "Minnesota Master Naturalist Volunteer" influenced how you think or perceive yourself?

Do you wear your nametag or use the title "Minnesota Master Naturalist Volunteer"? Please elaborate.

What does the title mean to you?

Has the title "Minnesota Master Naturalist Volunteer" influenced your interactions with others (i.e., friends, family, or finding volunteer opportunities)? Please elaborate.

Future

What do you value about the Minnesota Master Naturalist program?

What ideas do you have for enhancing the Minnesota Master Naturalist program? If from a rural area: do you have any suggestions for encouraging involvement in rural areas?

Do you have any final comments or thoughts you'd like to share?

Appendix B. Characteristics of interviewees

Table 1. Demographic characteristics of interviewees

Pseudonym	Age	Sex	Education level*	Annual household income**	Current or previous employment	Employment status	Residence***
Adam	73	Male	Advanced degree	30-50K	Minister	Retired	Urban
Brian	43	Male	Bachelor's	15-30K	Professor/Park ranger	Full time	Gt. MN
Carol	50	Female	Advanced degree	125-150K	Lawyer	Full time	Suburban
Evan	42	Male	Bachelor's	50-75K	Purchasing agent	Full time	Urban
Francie	46	Female	Some college	30-50K	Physical therapist/Student	Full time	Gt. MN
Kevin	46	Male	Bachelor's	15-30K	Patient Services Coordinator	Part time	Urban
Matt	28	Male	Bachelor's	30-50K	Pollution control specialist	Full time	Gt. MN
Paula	59	Female	Bachelor's	100-125K	Teacher	Retired	Suburban
Rose	54	Female	High school	50-75K	Manufacturing	Full time	Gt. MN
Savannah	57	Female	Advanced degree	50-75K	Teacher	Full time	Gt. MN
Tom	60	Male	Advanced degree	75-100K	Psychologist	Full time	Gt. MN
Vanessa	27	Female	Some college	15-30K	Insurance technician/Student	Full time	Suburban

*Highest level of education completed
**K represents $1,000; i.e. 30-50K means $30,000 to $50,000
*** Urban means the cities of Minneapolis or St.Paul; Suburban means the seven-county metropolitan area except the cities of Minneapolis or St.Paul; Gt. MN means any location outside the seven-county metropolitan area

Table 2. Recent volunteer work experience of interviewees

Pseudonym	Vol. hours 07*	Vol. prior to class**	Year graduated from class	Vol. service types	Selection of volunteer service projects
Adam	130	Yes	2006	Interpretation, Stewardship	Tree brochure, Forest management plan
Brian	157	Yes	2007	Interpretation	Logging camp education events
Carol	89	Yes	2006	Stewardship, Program support	Trail clearing, Advisory board work
Evan	23	No	2007	Citizen science, Program support	Frog surveys, GPS mapping maple trees
Francie	25	No	2007	Interpretation, Stewardship	Brochure about eagles, Maple syrup tapping
Kevin	93	Yes	2006	Stewardship, Program support	Prairie restoration, Neighborhood lake group
Matt	66	Yes	2006	Interpretation, Stewardship	Geology, astronomy talks; Prairie restoration
Paula	143	No	2005	Interpretation, Stewardship	Teaching about aquatic insects, Prairie seed collection
Rose	206	Yes	2006	Interpretation	Girl scout leader, Project wet facilitator
Savannah	40	No	2007	Interpretation, Stewardship	Native America maple syrup demonstration, Prairie seed collection
Tom	20	No	2007	Interpretation	Bat talks
Vanessa	20	Yes	2007	Citizen science, Program support	Collecting bird safe data, Caring for animals at wildlife rehabilitation center

*Volunteer hours recorded to the Minnesota Master Naturalist program in 2007.
**Response to question if they volunteered prior to taking the Minnesota Master Naturalist class.

Appendix C. Relevant survey questions, example survey consent form, and authorization letters

MINNESOTA MASTER NATURALIST

Start of class survey

Thank you for participating in this Minnesota Master Naturalist class. The purpose of the survey is to help us understand more about the class participants. We appreciate your willingness to complete this survey and your responses will help us improve the Minnesota Master Naturalist program. If you have any questions about the survey don't hesitate to call Amy Rager, the Minnesota Master Naturalist State Coordinator, at 888-241-4532 or email at rager001@umn.edu
Thank You,
Amy Rager and the Minnesota Master Naturalist Program Committee

Overall survey directions:
The survey consists of 26 questions and should take around 15 minutes to complete. Please mark the boxes below ☐ with an ☒ to indicate your preferences. Space is provided at the end for you to write any additional comments you have.

The numbers you enter in questions 1 - 3 will be used to create a confidential numerical code that will allow us track responses between this and other questionnaires. These three questions are the only questions that require a response.
1. In the box below enter the numerical month of your birthday (enter the appropriate number between 1 and 12)

☐ ☐

2. In the box below enter the numerical day of your birthday (enter the appropriate number between 1 and 31)

☐ ☐

3. In the boxes below please enter the **LAST** four digits of your home phone number (if you do not have a home phone enter the last four digits of your cell or your most frequently used phone number)

☐ ☐ ☐ ☐

Start of class survey – relevant questions

Please rate each of the following reasons for your participation in this Minnesota Master Naturalist class.

	Very unimportant	Somewhat unimportant	Neither	Somewhat important	Very important
Learn more about Minnesota's natural ecosystems	☐	☐	☐	☐	☐
A personally enriching experience	☐	☐	☐	☐	☐
Learn more about native plants and animals	☐	☐	☐	☐	☐
Be with people who value nature	☐	☐	☐	☐	☐
Improve skills to help others develop a stewardship ethic	☐	☐	☐	☐	☐
Develop skills to improve natural places in my neighborhood	☐	☐	☐	☐	☐
Meet people with similar interests	☐	☐	☐	☐	☐
Improve my teaching skills	☐	☐	☐	☐	☐
Improve skills to promote environmental conservation	☐	☐	☐	☐	☐
Learn more about nature-related volunteer opportunities	☐	☐	☐	☐	☐
Develop skills to improve privately-owned land in environmentally sound ways	☐	☐	☐	☐	☐
Develop skills to change careers to a nature-related career	☐	☐	☐	☐	☐
To be close to nature	☐	☐	☐	☐	☐

Please add any additional reasons that you consider very important to your participation in this Minnesota Master Naturalist class.

Did you volunteer for a nature-based organization in Minnesota in the last year?

- ☐ Yes
- ☐ No

If you answered "yes" to question 7, approximately how many hours did you volunteer for a nature-based organization in Minnesota in the last year?

- ☐ 1 - 10 hours
- ☐ 11 - 39 hours
- ☐ 40 - 69 hours
- ☐ 70 – 100 hours
- ☐ 101 hours or more

What factors influenced your initial interest in nature? (Please check all that apply.)

- ☐ Family
- ☐ Friends
- ☐ Formal group (Boy scouts, Girl scouts, 4H, etc.)
- ☐ Hunting
- ☐ Fishing
- ☐ Camping
- ☐ Living near natural places
- ☐ Bird watching
- ☐ Watch wildlife (other than birds)
- ☐ Caring for pets
- ☐ Class in school (elementary – college)
- ☐ Activity or class at nature-based center (camp, nature center, zoo, etc.)
- ☐ Other (Please specify) _____

How old were you when you became interested in nature?

- ☐ 4 years old or younger
- ☐ 5 to 10 years old
- ☐ 11 to 15 years old
- ☐ 16 to 19 years old
- ☐ 20 to 25 years old
- ☐ 26 to 30 years old
- ☐ 31 years old or older

Please describe how you became interested in nature.

In your own words, please describe how important nature and the natural world are to you.

Please tell us about you

Questions 15 through 25 ask about your background. To help improve this class, we are interested in knowing more about the participants that attend this class. The following questions help us better put your answers in context. Also, both the University of Minnesota and Minnesota Department of Natural Resources are committed to serving a diverse audience (including age, sex, and interests). Your answers to these questions will help us learn about the audience we are currently serving. Your answers will remain completely confidential.

What is your age?

_____

What is your sex?

- ☐ Male
- ☐ Female

What is the highest level of education that you have completed?

- ☐ Some high school
- ☐ High school diploma or GED
- ☐ Some college or technical/ vocational school
- ☐ Bachelor's degree (four-year college degree)
- ☐ Advanced degree (MA, MS, PhD, MD, JD, etc.)

What is your employment status?

- ☐ Employed full-time
- ☐ Employed part–time
- ☐ Unemployed
- ☐ Retired

What is the ZIP Code of your home?

_____

Thank you for completing this survey. We appreciate your responses and comments.

Amy Rager and the Minnesota Master Naturalist Program Committee

End of class survey – relevant questions

How well did this class meet your expectations?

- ☐ Less than I expected
- ☐ About what I expected
- ☐ Exceeded my expectations

To what extent did you enjoy this class?

- ☐ I did NOT enjoy this class at all.
- ☐ I did NOT enjoy this class much.
- ☐ Neutral
- ☐ I somewhat enjoyed the class.
- ☐ I really enjoyed this class.

How satisfied were you with this 40-hour class?

- ☐ Very DISSATISFIED
- ☐ Somewhat DISSATISFIED
- ☐ Neutral
- ☐ Somewhat satisfied
- ☐ Very satisfied

10. Please indicate BOTH how important each experience was to your satisfaction of the class AND how much you were able to attain that experience during your Minnesota Master Naturalist class.

	Importance					**Attainment**			
	Very UNIMPORTANT	Somewhat UNIMPORTANT	Neither	Somewhat important	Very important	Did NOT attain	Somewhat attained	Moderately attained	Totally attained
Learn more about Minnesota's natural ecosystems	☐	☐	☐	☐	☐	☐	☐	☐	☐
A personally enriching experience	☐	☐	☐	☐	☐	☐	☐	☐	☐
Learn more about native plants and animals	☐	☐	☐	☐	☐	☐	☐	☐	☐
Be with people who value nature	☐	☐	☐	☐	☐	☐	☐	☐	☐
Improve skills needed to help others develop a stewardship ethic	☐	☐	☐	☐	☐	☐	☐	☐	☐
Develop skills to improve natural places in my neighborhood	☐	☐	☐	☐	☐	☐	☐	☐	☐
Meet people with similar interests	☐	☐	☐	☐	☐	☐	☐	☐	☐

10 (continued). Please indicate BOTH how important each experience was to your satisfaction of the class AND how much you were able to attain that experience during your Minnesota Master Naturalist class.

	Importance					**Attainment**			
	Very UNIMPORTANT	Somewhat UNIMPORTANT	Neutral	Somewhat important	Very important	Did NOT attain	Somewhat attained	Moderately attained	Totally attained
Improve my teaching skills	☐	☐	☐	☐	☐	☐	☐	☐	☐
Improve skills needed to promote environmental conservation	☐	☐	☐	☐	☐	☐	☐	☐	☐
Learn more about nature-related volunteer opportunities	☐	☐	☐	☐	☐	☐	☐	☐	☐
Develop skills to improve privately-owned land in environmentally sound ways	☐	☐	☐	☐	☐	☐	☐	☐	☐
Develop skills to change careers to a nature-related career	☐	☐	☐	☐	☐	☐	☐	☐	☐
To be close to nature	☐	☐	☐	☐	☐	☐	☐	☐	☐

Please tell us about you

Questions 27 through 34 ask about your background and interests. To help improve this class, we are interested in knowing more about the participants that attend it. The following questions help us better put your answers in context. Also, the University of Minnesota and Minnesota Department of Natural Resources are committed to serving a diverse audience (including age, sex, income, and race/ethnicity). Your answers to these questions will help us learn about the audience we are currently serving. Your answers will remain completely confidential.

Which of the following best describes your race? (Please check all that apply.)

- ☐ American Indian or Alaskan Native
- ☐ African American/Black
- ☐ Asian
- ☐ Caucasian/White
- ☐ Pacific Islander
- ☐ Other (Please specify) _____

Do you consider yourself Hispanic or Latino/Latina?

- ☐ Yes
- ☐ No

What is your total, pre-tax household income?

- ☐ below $15,000
- ☐ $15,001 - $30,000
- ☐ $30,001 - $50,000
- ☐ $50,001 – $75,000
- ☐ $75,001 - $100,000
- ☐ $100,001 - $125,000
- ☐ $125,001 - $150,000
- ☐ $150,001 - $175,000
- ☐ $175,001 or above

Annual survey – relevant questions

How do you feel your volunteer work has impacted or contributed to Minnesota's natural environment?

Please rate each of the following reasons for your participation in nature-based volunteer work.

	Very unimportant	Somewhat unimportant	Neutral	Somewhat important	Very important
To learn more about nature	☐	☐	☐	☐	☐
To be outside in a natural area	☐	☐	☐	☐	☐
To educate others about nature	☐	☐	☐	☐	☐
To educate others about conservation	☐	☐	☐	☐	☐
To help others develop a stewardship ethic	☐	☐	☐	☐	☐
To improve natural areas	☐	☐	☐	☐	☐
To be close to nature	☐	☐	☐	☐	☐
To get exercise	☐	☐	☐	☐	☐
To get away from the usual demands of life	☐	☐	☐	☐	☐
To give something back to nature	☐	☐	☐	☐	☐
To meet new people with similar interests	☐	☐	☐	☐	☐

Continued. Please rate each of the following reasons for your participation in nature-based volunteer work.

	Very unimportant	Somewhat unimportant	Neutral	Somewhat important	Very important
To be with people who value nature	☐	☐	☐	☐	☐
To network with others	☐	☐	☐	☐	☐
To benefit your career	☐	☐	☐	☐	☐
To develop skills to change careers to a nature-related career	☐	☐	☐	☐	☐
To have fun	☐	☐	☐	☐	☐

Please add any additional reasons that you consider very important to your participation in nature-based volunteer work.

What do you value about your nature-based volunteer work?

Connection to Natural World

To what extent do you feel connected to the natural world?

☐ Not at all
☐ To a slight extent
☐ To a moderate extent
☐ To a great extent

Please describe how your nature-based volunteer work affects your feeling of connection to the natural world.

Community Connection

To what extent do you currently feel a sense of community with…

	Not at all	To a slight extent	To a moderate extent	To a great extent
The people you interact with through your volunteer work	☐	☐	☐	☐
Organizations that you currently volunteer for	☐	☐	☐	☐
Other Minnesota Master Naturalist program participants	☐	☐	☐	☐

To what extent **did** you feel a sense of community with Minnesota Master Naturalist program participants **during** your initial 40-hour class?

- ☐ Not at all
- ☐ To a slight extent
- ☐ To a moderate extent
- ☐ To a great extent

Please comment on the sense of community you feel with people you interact with through your volunteer work and/or other Minnesota Master Naturalist participants.

Please share any additional comments regarding how your nature-based volunteer work and/or Minnesota Master Naturalist volunteer work has influenced your sense of identity.

What do you value about the Minnesota Master Naturalist program?

CONSENT STATEMENT

Minnesota Master Naturalist Start of Class Survey

You are invited to complete a Minnesota Master Naturalist Survey. You were selected as a participant because you are attending a Minnesota Master Naturalist class. We ask that you read this form and ask any questions you may have before agreeing to complete the survey.

This study is being conducted by the Minnesota Master Naturalist Committee including the following main researchers from the University of Minnesota, Amy Rager and Karen Oberhauser.

Background Information:
The purpose of the survey is to gather information about the class participants. The survey will ask previous naturalist knowledge, your interest in nature, and demographic questions. Your responses will help us improve the Minnesota Master Naturalist program.

Procedures:
If you agree to participate, you will be asked to complete a short survey. The survey should take about 15 minutes. The survey will be posted on-line and you will receive a link to the survey site.

Risks and Benefits of Being in the Study:
There are no immediate or expected risks for participating in the survey. The survey is completely confidential. Once your responses are entered into an electronic file, the original survey form will be destroyed. There are also no immediate or expected benefits for you for participating in the survey.

Confidentiality:
The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the Minnesota Master Naturalist program, University of Minnesota or the Minnesota Department of Natural Resources. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions:
The main researchers conducting this study are Amy Rager and Karen Oberhauser. You may ask any questions you have by emailing Amy at rager001@umn.edu or you may also contact her by phone at 888-241-4532.
You may also contact Karen at oberh001@.umn.edu or by phone at 612-624-8706.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You may have a copy of this form to keep for your records.
You do not need to sign or return this form.

IRB Study Number 0601580786

NAAEE
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Margaret Guiney
Ph.D. Student
University of Minnesota

Dear Ms. Guiney,

This letter is to approve the inclusion of part or all of the following paper we, NAAEE, have published:

Guiney, M.S., R. B. Blair, D. Flinn, M. M. Haggerty, M. B. Main, K. S. Oberhauser, A. Rager, G. Wallace. 2006. Master Naturalist: a multiple state natural history education and community service program. North American Association for Environmental Education 2006 conference proceeding. Available at:
http://www.naaee.org/conference-history/2006-proceedings.

We fully understand that when you complete your dissertation at the University of Minnesota, the ProQuest or you may wish to may supply single or multiple copies on demand. We also understand that now or in the future your dissertation made be made openly available via directories, databases, or other open source methods and the inclusion of this work is not a problem from our perspective here at NAAEE. IF appropriate, we would like a reference to our publication of your work. We have no problem with this whatsoever and hope the paper you presented and published with us is helpful in your career path and hope you will continue to find your membership in NAAEE helpful as you continue to contribute to the growth and professionalism of the field.

Good luck with your dissertation!

Yours for Excellence in Environmental Education,

Brian A. Day
Executive Director

Dear Dr. Laura Hoelscher,

I would like to include the following published JOE article in my dissertation and I am writing to receive permission. I am required by
the University of Minnesota to receive a letter of permission from the publisher. The letter needs to state that the copyright owner is aware that ProQuest may supply single copies on demand. Also the work is will likely be available for open access. Please let me know if these terms are acceptable by the JOE publisher.

Savanick, M.A., R.B. Blair (2005). Assessing the need for Master Naturalist Programs. Journal of Extension. Available at:
http://www.joe.org/joe/2005june/a7.shtml

Sincerely,
Margaret Guiney

Dear Ms. Guiney,

As the editor of the Journal of Extension (JOE), I am very glad to grant you permission to use the article you cite as you have described. That's one of the things that JOE is "there for," after all.

We do ask that you credit JOE, the article, and the authors of the article.

Sincerely,

Laura Hoelscher

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