LEARNING THROUGH COLLABORATION: AN INVESTIGATION OF COMMUNITIES OF PRACTICE IN STREAMKEEPERS GROUPS

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JILLAYNE PEERS

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Abstract

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Jillayne R. Peers
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Advisor:
Dr. John FitzGibbon

This thesis is an investigation of communities of practice in environmental stewardship organizations. Research focused on three different sized Streamkeepers groups in British Columbia's Lower Mainland. All three of the groups are considered successful based on their long-term sustainability and adaptable programming. Data were collected through semi-structured telephone interviews, and participant observations during group activities. Open- and axial-coding were used to analyze the data through identifying themes and patterns.

The study results show that there are strong indicators of communities of practice that are found in Streamkeepers groups. The analysis, based on a conceptual framework, focuses on: learning, domain, community and practice (communication and boundary). Information that was collected through this research points towards a high-degree of overlap between stewardship ideals and the various elements of communities of practice. These results indicate that watershed managers and planners as well as volunteer coordinators must be aware of how to harness these elements in order to enhance community-based management of natural resources. Recommendations are provided in order to enhance practice for individual stewards, stewardship groups as well as agencies and professionals working with stewardship organizations.

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Chapter One: Introduction

1.1 Background

Since the publication of the World Commission on Environment and Development's (WCED) report, Our Common Future in 1987, the concept of sustainable development has become a key concern for planners. A sustainable approach to planning takes social equity, fair resource distribution, and economic versus environment conflicts into account. It requires that social, economic, and environmental factors be considered in actions and policy-making (WCED, 1987). The notion of sustainable development is especially important in addressing environmental concerns, and is a central concept for many conservation groups.

Watershed-level management is considered the ideal scale for managing natural resources, especially water and aquatic-based resources, which are affected by all activities in a drainage basin (e.g. Blomquist and Schlager, 2005; DeBarry, 2004). Within watershed planning and management, governance structures must include local-level management and public participation in order to make initiatives sustainable (Hooper, 2005). Adaptive management and therefore learning, is an important aspect of watershed planning (O'Neill, 2005). Resource management involves an ongoing learning and negotiation process which leads to the development of adaptive strategies (Pahl-Wostl and Hare, 2004). In order to create transparent mechanisms for adaptive watershed management, information and knowledge bases must be made available to all parties involved in management (LEPS, 2003). One of the key questions raised in collaborative resource management is: how can learning be fostered among participants

(Schusler et al., 2003)? Borrini-Feyerabend et al. (2000) emphasize that thinking, acting, and discussing management issues as a group is imperative to enhancing common knowledge, skills, and awareness. Therefore, knowledge and learning are necessary in adaptive planning of natural resources.

Often, resource management involves collaboration and partnerships between many groups. The role of volunteer management and stewardship programs is becoming more important in the development and implementation of plans involving natural resources. Although the role of stewardship is becoming more prominent, there is very little academic research that has been conducted on the internal functioning of stewardship groups and programs. More research on how these groups interact, share knowledge, and perpetuate their practice is needed in order to design successful stewardship programs.

As identified earlier, knowledge-sharing and learning play an important role in natural resources management. This 'human dimension' of natural resources management has increased in significance over recent years (Pahl-Wostl and Hare, 2004). Communities of practice theory offers insight into the participatory learning process required for planning and managing natural resources (Pahl-Wostl and Hare, 2004).

Communities of practice theory can be broadly defined as "people sharing their experiences and knowledge in free-flowing, creative ways that foster new approaches for problems" (Wenger and Snyder, 2000 p. 139). Although many of the results of communities of practice are intangible, and are thus difficult to

determine; they drive strategies, solve problems, promote best practices, and develop skills and programs (Wenger and Snyder, 2000). These communities cannot necessarily be built, but can be encouraged through the application of proper techniques (Wenger, 1998). As communities of practice theory becomes more popular and is applied in a variety of contexts, it requires further study. In addition, tools need to be developed for the development and management of these learning communities (Roberts, 2005).

1.2 Rationale

The challenges underlying sustainable development lie in addressing economic, social, and environmental issues in a balanced and adaptive manner. Watershed planning, taking an adaptive management approach, provides an integrated means by which the sustainable resource management process can be facilitated. Within watershed planning, governance structures are evolving from agency-based management towards local-level management. Volunteer-driven stewardship groups are an important part of this shift. As with other organizations, stewardship groups rely on learning processes in practical situations in order to be productive and achieve goals. To better understand and encourage stewardship group practices to improve, studies need to be conducted into the internal functioning and dynamics of these groups. Thus, communities of practice theory offers a way by which stewardship groups can be analyzed and tools can be developed to improve stewardship group operations.

1.3 Goal and Objectives

This work seeks to understand the processes by which stewards and stewardship groups interact and operate. The goal of this research is to determine how communities of practice theory applies to stewardship organizations and activities.

The following four objectives have been used to guide this research and fulfill the study goal:

Objective #1: To identify the elements of communities of practice which are found in stewardship groups;

Objective #2: To determine how these elements contribute to the success of stewardship organizations and projects;

Objective #3: To develop a model to describe communities of practice in stewardship organizations;

Objective#4: To evaluate how stewardship organizations can encourage and enhance communities of practice within their structure

1.4 Significance of the Research

This research makes significant contributions both to academic literature and to stewardship groups and managers actively involved in stewardship work. Firstly, this study builds upon the emerging literature on environmental stewardship- specifically looking at motivations for environmental behaviour and reasons for stewards to remain active in their groups. The research also expands on this idea by applying communities of practice theory to natural resources management- an area where only a few studies have been done. The specific combination of communities of practice and environmental stewardship is not known to have been previously studied.

The research provides insight that can be used by individuals, groups or organizations working with stewards to enhance the effectiveness of stewardship initiatives. This is done by:

- Developing an understanding of learning and information sources for individual stewards and groups;
- Analyzing the role of social dynamics within and between groups to improve their relationships and productivity;
- Identifying key motivating factors for joining and reasons for remaining with stewardship groups;
- Gaining a perspective of how having a shared vision contributes to group successes;
- Recognizing the main means by which groups communicate internally and externally.

This combination of factors has not been found elsewhere in the literature. Through investigating these attributes of stewardship groups and communities of practice, a model for stewardship group processes was developed to help plan interventions with groups. The process model helps to inform stewardship and natural resources planning practitioners.

1.5 Structure of the Thesis

This thesis is laid-out in eight chapters which follow the research process. Following this introduction chapter, Chapter Two presents a review of the literature on sustainable development, watershed planning, stewardship and communities of practice theory. The final section of Chapter Two presents the conceptual framework, which the remainder of the thesis is based upon. Chapter Three outlines the qualitative research methods applied for the study, while

Chapter Four introduces the case study context and basic background information on each of the three study groups.

Findings from the research are presented for each of the three groups in Chapter Five. A cross-case analysis, with reference to the literature followed by the discussion is provided in Chapter Six. The final chapter of the thesis offers conclusions and recommendations from the study.

Chapter Two: Literature Review

2.1 Introduction

This chapter provides a review of literature found on sustainable development, watershed planning and management, stewardship, and communities of practice theory. The literature review is structured to provide background on how these concepts connect, and to help support the research question relating to successful stewardship organizations and the applicability of communities of practice to these groups. The sections on sustainable development and watershed planning set the context for the importance of stewardship activities. Stewardship activities are then reviewed, leading to the significance of group learning and dynamics within stewardship organizations. The review of communities of practice theory sets the stage for what aspects of stewardship groups will be studied during the research portion of this project. The final section presents a conceptual framework by which the remainder of this thesis will be approached.

2.2 Sustainable Development and Planning

Since the release of the Brundtland Report by the WCED (World Commission on Environment and Development) in 1987, sustainable development has become core for planners and those involved in the development field. The Brundtland Report defines sustainable development as meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987; p. 43). Thus, it requires an approach that encompasses economic, social, and ecological perspectives. Although the Brundtland Report has been considered very important to the discussion of sustainable development, it has

also been criticized for its ambiguity and focus on economic growth (e.g. Brooks, 1990; Daly, 1996). In order to deal with these issues, sustainable development requires a change in the quality of growth and resource exploitation (WCED, 1987; Daly, 1996).

From a planning perspective, sustainable development is a vital concept. It is now commonly accepted among practitioners that plans must incorporate the three core aspects of sustainable development along with projections of future implications of current actions.

2.3 Watershed Planning and Management

2.3.1 Background

Watersheds are increasingly recognized as the most applicable spatial unit at which the management of natural resources, especially aquatic resources, should occur (Davenport, 2003). Many authors have identified watershed level planning as an important tool for sustainable development (e.g. Rhoades, 2000; DeBarry, 2004).

Technically, a watershed is the boundary of a catchment or drainage basin. However, the term watershed is applied beyond the boundary of the basin itself to include “an area of land within which all waters flow to a single river system” (Heathcote 1998, p.4).

2.3.2 Ecosystems Perspective and Social Ecological System Perspective

Watersheds, however, are not limited to just water and land- they consist of many components. Taking an ecosystems approach, one considers the “air, land,

water, and living organisms, including humans, and the interactions among them" in planning (MoE and MNR, 1993, p. 1). Therefore, an ecosystem encompasses living communities in addition to the physical environment. The MoE and MNR (1993) also refer to the concept of a "macro-ecosystem", which refers to the "relationships among environment, society, and economy" (p.1). It is imperative to include society, environment, and the economy to achieve long-term goals in watershed management.

Many authors stress the importance of ecosystems thinking as a key way to approach watershed planning (e.g. Soloway and the Township of Mono, 1991; MoE and MNR, 1993). The ecosystems approach involves several core principles: everything is connected to everything else, humans are a part of nature, we are responsible for our own actions, and economic and environmental health are not mutually exclusive, rather, they are mutually dependent (Soloway and the Township of Mono, 1991).

The concept of integrated river basin management (IRBM) builds upon the ecosystems approach; taking

> an integrated and coordinated approach to the planning and management of natural resources of a river basin, one that encourages stakeholders to consider a whole array of social and environmental interconnections in a catchment/watershed context (Hooper, 2005, p.9).

Therefore, it provides a focused approach that reinforces the ecosystems approach to planning, but emphasizes the integrating of 'top down' and 'bottom up' processes of resource management (Hooper, 2005).

Ecosystems thinking in the context of watershed management offers valuable insight into biophysical, and to some extent, social aspects of a catchment. Along the lines of Hooper (2005), Woodhill and Rölling (1998) argue that environmental management needs to focus more on human interactions within the system than an ecosystem perspective can provide. Social ecological systems allow for monitoring the social aspect of biophysical problems (Woodhill and Rölling, 1998). Social ecological systems perspective includes the human perception and learning process that is connected to the surrounding ecosystem. This approach, therefore, offers an opportunity to develop more adaptive and iterative environmental management techniques at the watershed level.

2.3.3 Watershed Governance

Governance is a key challenge faced by watershed planners and managers in North America. Critical questions regarding resource management revolve around identifying how decisions are made by authorities, and what motivations behind decisions are (Goodwin, 1998). Emphasis on changes in the process of governing, the creation of conditions for collective action and ordered rule, as well as recognition of the interdependence of public, private, and voluntary services are integral to governance (Stoker, 1998).

Much focus is also placed on the decision making processes of governance. For the purpose of this discussion, the Institute on Governance (2005) definition of the concept will be applied: “Governance is the process whereby societies or organizations make important decisions, determine whom they involve and how they render account”.

In the National Stewardship Report from 2003, groups identified coordinated governance and integrated decision-making as important concepts in promoting watershed stewardship programs (LEPS, 2003). Governance at the watershed level can be highly challenging. Blomquist and Schlager (2005) stress the complexities of managing watersheds from a political perspective, as multiple-jurisdictions are involved. They argue that defining watershed boundaries, having adequate decision making arrangements, and (inadequate) accountability of decision makers to the watershed community are potential pitfalls of watershed planning efforts (Blomquist and Schlager, 2005). Thus political and social conditions in a watershed are extremely important to consider when developing a watershed stewardship plan (O'Neill, 2005).

Watershed-scale planning also entails dealing with ownership issues. Many watersheds are a mosaic of private and public lands and contain both urban and rural areas, adding to the already complex political structure of most watersheds (O'Neill, 2005). Imhof and Plummer (2003) also state that many river corridors and areas of watersheds are complex areas that modify common property systems. This reality of watershed management in North America results in the need to address the ethics of land ownership. To address landowner actions, planners must include landowners and citizens in planning efforts to facilitate effective plans (Geisler and Daneker, 2000).

2.3.4 Adaptive Management and Social Learning

Watershed planning is a challenging, and sometimes overwhelming task (Davenport, 2003). It requires an approach that is both adaptive and iterative, and needs to take a systems viewpoint to dealing with planning and management topics (Davenport, 2003). Adaptive management takes various levels of management and techniques, and applies them to watershed resources planning (O'Neill, 2005).

Lee (1993) describes adaptive management as a social learning process in the form of an 'experiment' in which economics, social relationships and politics interact. Keen et al. (2005) also stress that taking a social learning approach to environmental management results in adaptive learning processes. Adaptive management from this viewpoint involves collective action and reflections on actions in order to improve management (Keen et al., 2005). This argument emphasizes that sustainable resource management relies on "our capacity to learn together and respond to changing circumstances" (Keen et al., 2005 p.6). Thus, adaptive management focuses on the importance of learning in group situations through participation in management.

In order to develop comprehensive watershed management plans (taking an adaptive approach), Rogers and Biggs (1999) argue that clearly defined processes, procedures and roles are required to balance societal value systems and scientific rigor. Through having procedures and a clear management hierarchy in place, management actions are guided to ensure that goals and

objectives are met through appropriately adapting to changing conditions (Rogers and Biggs, 1999).

2.3.5 Watershed Management: Process Tools

2.3.5.1 Public Participation

Many watershed planning efforts also fall short by not sufficiently involving the public in identifying problems and working on solutions at the watershed level (Rhoades, 2000). Public participation is important to identify approaches that can be taken to watershed planning, and to attempt to realize the values of uses of watershed 'goods' (Veale, 2003). Thus, watershed planning initiatives must include local stakeholders and build on local cultural institutions (Rhoades, 2000; Blomquist and Schlager, 2005).

An important part of public participation is communication between managing groups and local residents (Wagner, 2005). By integrating social information collected from public participation into watershed plans, a strong message can be sent to the community about the importance of communication and cooperation between planners and the public (Wagner, 2005).

2.3.5.2 Coordination

The need for coordination of institutions and programs is also another common issue with watershed planning. In the absence of coordination, programs can be duplicated at the watershed scale, leading to inefficiencies or even counterproductive efforts (DeBarry, 2004). Veale (2003) states that the coordination of activities is an important aspect of developing best practices for

watershed management. Although highly critical of the political complexities of watershed-scale bodies, Blomquist and Schlager (2005) note that jurisdictions must be combined in order to obtain inter-agency coordination.

2.3.5.3 Partnerships

Partnerships between agencies and groups are an important way to integrate science, policy, and public viewpoints into resource management strategies (Davenport, 2003). Partnerships between these groups can also produce effective environmental programs at lower costs than if groups were acting on their own (Soloway and the Township of Mono, 1991; OECD, n.d.). These partnerships work with a common goal, which relates to improving decisions that are made in watersheds (OECD, n.d.). The OECD (Organization for Economic Co-operation and Development; n.d.) state that partnerships result in an integrated approach to policies, and encourage adaptive programs that fit local needs. In a watershed context, it is important to encourage participants in all areas of the watershed to participate in these partnerships, as often those in upstream areas are not as concerned with resource conditions as those in downstream areas (O'Neill, 2005).

2.3.5.4 Consensus Building

The collaborative approach to planning often encourages consensus building arrangements in order to develop strategies and solve problems (Innes and Booher, 1999). Innes and Booher (1999) argue that through bringing all stakeholders to the table, and having a participatory, facilitated process, there is the potential to reach consensus after sufficient efforts have been made.

Blomquist and Schlager (2005) criticize this argument with the notion that consensus building actions often lead to gridlock or competing values are 'bought-out' or go unheard. Criticisms aside, consensus building can offer a way to cope with rapidly occurring changes in resource conditions (Innes and Booher, 1999).

2.3.5.5 Technology, Scientific Data, and Expertise

Along with the value of coordination of initiatives, partnerships, and the need for consensus on issues or plans, watershed plans require strong science, technology, and management expertise to be successful (O'Neill, 2005; Imhof and Plummer, 2003). The process of developing sound management techniques can be repetitive, which involves a long time period and patience in plan development (O'Neill, 2005). This process involves not only the collection of data, but learning from other plans, projects, and case studies in resource management (Rhoades, 2000). By providing managers and members of the public with good information, in a transparent manner, individuals are able to make informed decisions.

2.3.5.6 Regulatory versus Non-regulatory Measures

One of the major challenges in the management of common pool resources is whether to use regulatory or non-regulatory measures in order to conserve resources. Dietz and Stern (2002) classify environmental policies into five different types, listed in Table 2.1. The authors argue "command and control" as well as market-based methods of controlling polluting or potentially degrading environmental practices were primarily useful when industry produced point-

source pollution (Dietz and Stern, 2002). Over time, however, the issue of non-point source pollution has increased in stature regarding environmental concerns. As "command and control approaches to such sources is not possible, it makes sense to try alternative approaches" (Dietz and Stern, 2002 p.7). Plummer et al. (2006) also found that regulatory methods have limitations when addressing issues that are difficult to regulate.

Table 2.1- Traditional versus 'new' types of environmental policies (adapted from Dietz and Stern, 2002 p.4))

Command and control	"Traditional" environmental protection tools, with explicit external control, which have been prominent over the past quarter century.
Market based	
Education	"New tools" for environmental management, which have implicit behavioral control over actions, supplement traditional policies and, contribute to the reduction of environmental impacts
Provision of information	
Voluntary measures	

Pretty (1998) states that in cases where policies need development, they should be established through a participatory process that facilitates dialogue between various groups. Through the use of alliances, policies can receive rapid feedback, and be adapted iteratively (Pretty 1998). Policies, the author notes again, must address the issues of sustainability and learning to be adaptable to changes in societal and environmental conditions (Pretty, 1998).

Alternative approaches to environmental regulations (Table 1) encourage a shift in attitudes of individuals towards more 'environmental' thought. Voluntary measures typically include agreements between different groups (such as industry and regulatory agencies) to take steps towards improving environmental standards (Dietz and Stern, 2002). Shifting towards more voluntary and behavior-change oriented policies also results in a less

antagonistic perspective on environmental protection (Dietz and Stern, 2002). Government agencies have started to recognize this, and there are strategic shifts occurring towards the use of more non-regulatory tools along-side of regulatory tools (Plummer et al., 2006).

2.3.6 Watershed Planning Process: Steps and Outcomes

Heathcote (1998) notes that watershed planning can proceed in a variety of ways. This can vary from a single-agency or authority dominated process, with little or no participation to multi-party, multi-perspective plans with consensus at each step. The choice of the process is highly contextual but, unilateral planning processes are bound to fail in either the planning or implementation stage (Heathcote, 1998).

Traditional approaches used a more rational, 'top-down' process whereas more recently, there have been trends towards a more 'grassroots' process of watershed planning where local ideas are incorporated into decision-making. Watershed planning should act as a means to achieve social change, as well be a "consensus-building process, not a unidimensional scientific exercise" (Heathcote, 1998 p. 12). This point is echoed by O'Neill (2005), who states that successful watershed management depends on local socio-political conditions and support. Thus, watershed planning requires an integration of sound scientific and social processes in order to be successful.

Many different approaches to watershed management planning exist. Appendix 1 shows two 'integrated' approaches to developing a watershed-level plan, one

using a more traditional, rational perspective (Heathcote, 1998), and the other using a more participatory approach (Hooper, 2005). Figure 2.1 is an adaptation from Veale (2003 p. 3), which illustrates a common representation of the planning process (also see Davenport, 2003).

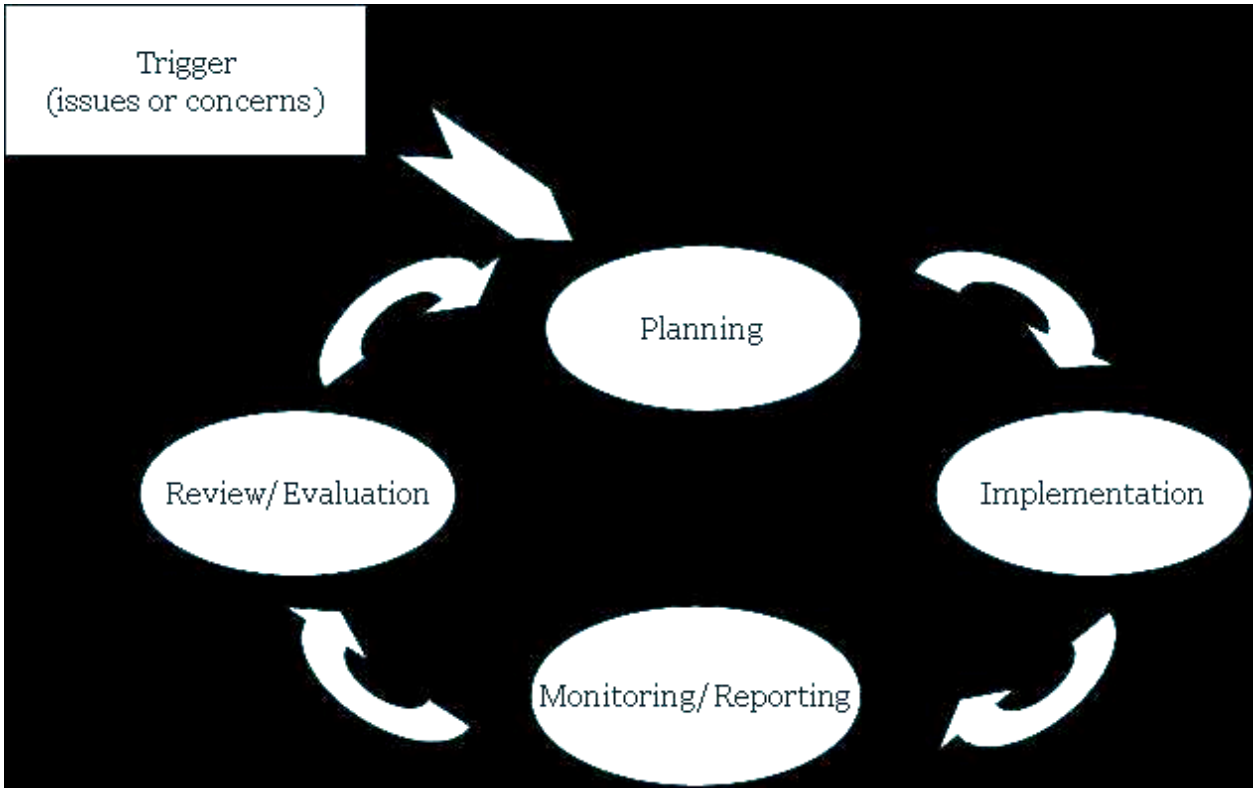

Figure 2.1- The planning process as described by Veale (2003)

As mentioned in previous sections, the watershed planning process is on-going and involves adaptation to changing conditions and contexts within a watershed. The steps taken in watershed planning require collaboration between stakeholders and strong partnerships in order to reach common goals.

The first step is a trigger, in the form of a problem, issue or concern, which leads to developing a plan (Figure 2.1: Veale, 2003). Planning includes collecting data

and developing a plan to be implemented. The planning stage should also include a mission statement that helps stakeholders identify their roles and relationships (Davenport, 2003). These roles and responsibilities should continue during the implementation phase. Watershed plans should include monitoring as well as reporting phases (throughout implementation). This requires that planners and managers review the process through evaluation.

One of the main outcomes of the watershed planning process is the production of a dynamic, sustainable means of managing resources in a watershed (DeBarry, 2004). To measure success in watershed projects and management approaches, it is essential that evaluators look beyond environmental outcomes. Born and Genskow (2000) stress the importance of considering institutional outcomes, other accomplishments, along with environmental conditions when assessing the success of a watershed project.

Within these outcomes the nature of partnerships between NGOs or local organizations, and government (upper and lower tier) are extremely valuable. Social learning processes found in adaptive management can result in the building of social capital, for example trust and knowledge, which strengthens the partnerships that are formed (Pahl-Wostl and Hare, 2004). Other outcomes in successful watershed-scale management include organizational development and securing of long-term funding (Born and Genskow, 2000).

2.4 Stewardship

Engaging local groups and leaders plays a fundamental role in developing strong and sustainable watershed-level initiatives (Born and Genskow, 2000). Therefore, working with citizens, landowners and industries in order to promote land and resource stewardship can facilitate a change in attitudes towards ecological awareness and, as such, can help transfer the responsibility for issues and actions away from agencies to the watershed community (Fitch, 2000).

Stewardship requires a change in the role of government, and an increase in the role of community-level actions (Worrell and Appleby, 2000). Berry (2006) points out that with an increase in the role of stewardship, human behavior can be re-shaped to maintain a more sustainable relationship with ecosystem functioning. Deeply rooted in ethical applications, stewardship provides an alternative to traditional, regulatory approaches to environmental management (Plummer et al, 2006). As such, stewardship compliments and reinforces environmental regulations, and can even replace the role of regulations when collective actions are taken (Osborn, 2006).

Stewardship programs have the advantage of protecting and enhancing the environment at a lower cost than government-based initiatives. It is therefore, an economically efficient way to protect the environment and support community activities (LEPS, 2003). As such, stewardship activities make an important contribution to watershed planning and management.

2.4.1 Towards a Definition of Stewardship

Over the past several decades, the term “stewardship” has significantly increased in use. Along with this increase in use comes a wide range of definitions, concepts, and ethical principles that are applied to the term (Worrell and Appleby, 2000). The scope of activities undertaken through stewardship initiatives is wide-ranging, and programs occur at a variety of scales- from private property stewardship to national stewardship programs. It is also important to note that very little academic literature exists on stewardship; as such, defining stewardship can be a challenge.

Mulley and Boardley (2000, p.8) summarize the definitions of stewardship used in the *Caring for Our Land and Water Conference Proceedings* as: “any action reflecting positively on the land and natural resources”. They add that other important aspects that showed up in the Proceedings include moral or ethical commitments, caring for future generations, and voluntary actions (Mulley and Boardley, 2000). Mitchell and Brown (2000, p.138), in their review of global stewardship efforts propose this definition of stewardship: “efforts to create, nurture, and enable responsibility in landowners and resource users to manage and protect land and natural resources”.

The definition provided by Worrell and Appleby (2000 p.263) provides one of the more complete definitions of stewardship:

> Stewardship is the responsible use (including conservation) of natural resources in a way that takes full and balanced account of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society.

This definition provides the elements of ethical commitments, and covers the types of interests that are being considered. Including the voluntary nature of stewardship activities would be a factor that would strengthen this definition.

Referring to the above discussion, the following core concepts of environmental stewardship which are present in most definitions include: responsible use of natural resources, conserving nature for future generations and society as a whole, improvements in resource conditions, intrinsic values, and voluntary actions.

2.4.2 Historical and Ethical Perspectives on Stewardship

There are many theories regarding the historical roots of stewardship- these can be broadly categorized into religious and secular viewpoints (Palmer, 2006). Much of the stewardship literature argues that stewardship is based upon a Christian ethic, dating back to the Old Testament (Palmer, 2006, Salsich, 2000). From this standpoint, all material goods belong to God, and the individual can use these goods for their own sustenance, but must maintain and preserve the land and its resources for future generations (Salsich, 2000). Stewardship has also been linked to foundations in Islam as well as aboriginal beliefs, where land belongs to ancestors and is to be cared for (Berry, 2006; Worrell and Appleby, 2000).

Palmer (2006) refutes the Christian foundations of land stewardship, claiming that the Bible is inconsistent with its attitudes towards nature, and the notion of "stewardship" is not explicitly used in conjunction with "nature" in the Bible. She

continues to explore the theological concept of stewardship as being an anthropocentric ethic, where humans are able to control nature, and use it for their own needs (Palmer, 2006). Stewardship from a theological perspective can also have negative associations with exploitation, servitude or hierarchy (Palmer, 2006; Berry, 2006).

The term “steward” itself, is rooted in the word sty-ward, meaning one who looks after farm animals (Worrell and Appleby, 2000). This perhaps ties into secular perspectives of stewardship, which also have strong foundations in ethical principles.

Osborn (2006) identifies stewardship as having many congruencies with the ethos of public service. These traits include: serving the public interest, long-term ‘good’, integrity/honesty/transparency, as well as equity and fairness (Osborn, 2006). Saner and Wilson (2003) also identify elements of ‘good governance’ in stewardship ethics. They emphasize the elements of similarity between the UNDP (United Nations Development Program) principles of good governance and effective stewardship. Participation, responsiveness, consensus orientation (inclusion and trust), effectiveness/efficiency (monitoring and assessment), accountability, transparency, the ‘rule of the law’ (fairness and consistency), and strategic vision are all identified elements of both good governance and stewardship principles found in the literature (Saner and Wilson, 2003). Worrell and Appleby (2000) also identify many of the same traits in stewardship principles, but add that stewards acknowledge the intrinsic value of ecosystem components- which considers perspectives beyond anthropocentric

viewpoints. Therefore, many traits can be identified for stewardship in non-religious settings as well (Figure 2.2).

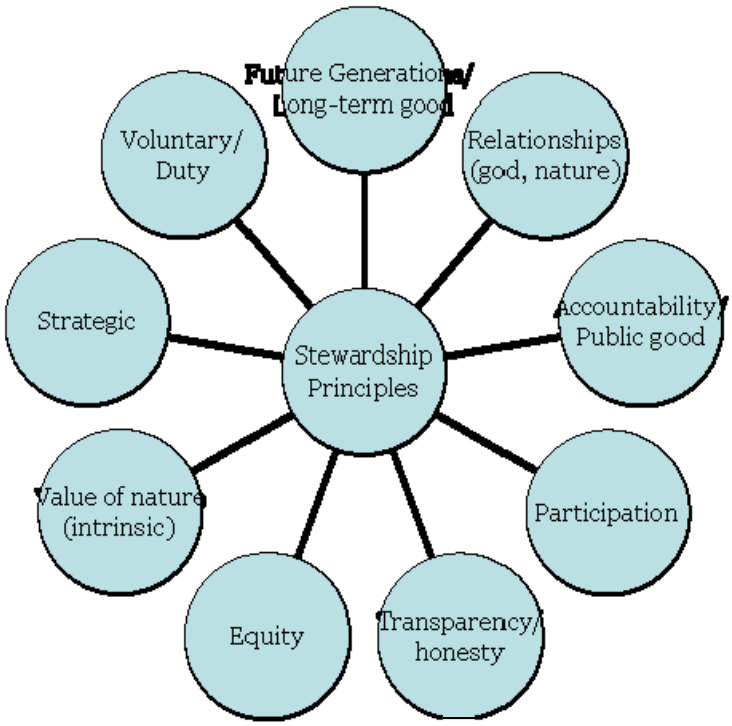

Figure 2.2- Ethical principles underlying stewardship activities as identified in the literature

One of the most important factors identified by Mulley and Boardley (2000) is voluntary action in stewardship ethics. They mention that a steward is an individual who has a strong understanding and connection to the environment, and is one who seeks to be 'right' in their actions. Stewardship is deeply rooted in these ethics and can not be forced upon individuals, as these actions are typically voluntary and should not usually be mandated by authorities.

2.4.3 The Steward

Reviewing the profiles of what type of individuals engage in and support stewardship initiatives can provide valuable insight into how stewardship activities succeed. This section will provide a review of literature regarding the profile of and motivations of individuals involved in environmental stewardship groups.

There is an emerging literature which examines the attributes and motivation of environmental stewards. As this literature is still in the developing stages, consensus has not been reached regarding many aspects of the literature, and a broad range of questions still require addressing.

2.4.3.1 Towards a Profile of Active Environmental Stewards

In a recent literature review on motivations and barriers to volunteering in stewardship organizations, Wahl (2006) presented findings from a peer-reviewed literature found on environmental stewardship (pertaining to North American and Australian contexts). In this review, she touched upon points relating to the demographic characteristics of environmental volunteers. As found in other studies such as Donald's (1997) work on fostering volunteerism in the Don River Watershed, very few studies on environmental stewardship include information on the demographics of individuals participating in stewardship groups. Not only is this literature thin, but of the studies that have been conducted, very few have asked participants the same questions regarding demographic variables.

Although there is a lack of consistency in the literature regarding the demographic data collected for environmental steward profiles, it is important to touch upon key trends found in the studies in order to gain a basic understanding of who currently participates in environmental stewardship activities. A summary of the demographic information found in the literature reviewed by Wahl (2006) is shown in Table 2.2.

Table 2.2- Demographic information found in the environmental stewardship literature based upon Wahl (2006).

Demographic Variable	General trends and target groups identified through reviewed literature
Gender	Generally an even male to female ratio, with some studies indicating higher female participation
Age	30-60 years old
Residency	Longer-term residency (than area average) in homes and communities
Ethnicity	British or European heritage
Education	Minimum high-school education (high proportions with post-secondary degrees)
Income	Upper-middle class income brackets
Employment	Full-time or retired

Basic demographics aside, some studies have found that individuals who are active in stewardship activities are likely to be involved in multiple volunteer and community-based groups (Donald, 1997), showing a strong commitment to community efforts.

The above discussed factors can provide basic guidelines for potential target audiences for stewardship recruitment campaigns. However, in order to become more acquainted with the types of individuals who should be targeted by stewardship coordinators, insight into motivating factors for joining stewardship groups should be provided.

2.4.3.2 Motivating Factors for Environmental Stewards

Ryan et al. (2003, p. 32) state that understanding the motivations for undertaking stewardship and conservation-related behaviors is “vital for promoting widespread protection of threatened resources”.

In studying volunteer commitments with respect to environmental stewardship programs, Ryan et al (2001) found that the main reasons for volunteering in stewardship were ‘helping the environment’ and learning. Similar findings were also noted by Donald (1997), in that most individuals joined the Don Task Force for altruistic reasons rather than as a means of personal benefit. This strong passion for contributing to environmental solutions is noted in many studies (Neave, 2000).

Learning and knowledge were themes that arose in several studies (Ryan et al. 2001; Ryan et al. 2003; Donald, 1997; and Gooch, 2002). In their studies they found that participants learned about problems and solutions to issues in the watershed, and also acquired new skills. In some cases, there were documented behavior changes as a result of learning through stewardship group participation (Ryan et al., 2001). Reflection and observation of natural areas could also fall under the learning category, providing participants with the opportunity to learn more about themselves in a natural area (Ryan et al. 2001). In her study on ecological identity for catchment volunteers, Gooch (2002) emphasized the importance of collective learning within stewardship groups in building local knowledge and contributing to natural resources management.

Some of the studies found that for individuals participating in stewardship activities friendships other and social aspects of volunteering motivate them to participate in group activities (Donald, 1997; Ryan et al 2001). Through participating in stewardship activities with other like-minded individuals, groups build social capital, and can develop a shared ecological identity which strengthens these social aspects (Gooch, 2002).

Another key aspect to stewardship volunteer motivations is in the connection to place and their community (Ryan et al., 2001; Gooch, 2002). This strong sense of place, and desire to maintain lands for future generations was also discussed as a motivator in developing a land ethic in Aldo Leopold's 1949 *A Sand County Almanac*.

Motivations for participation may link back to life-long experiences in environmental activities. A variety of studies have also been conducted on environmental behavior and exposure to natural settings during childhood. In one of the more extensive studies in the area, Wells and Lekies (2006) found that individuals who were exposed to hands-on "wild nature" activities before the age of eleven have a positive association with adult environmental attitudes and behavior.

Many other potential motivations for joining voluntary stewardship groups were cited in the literature. These included key factors such as enjoyment of activities, increased responsibility in the community, and well-organized projects (Donald, 1997; Ryan et al. 2001).

Many of the discussed motivations can be linked to the work of Maslow (1943), which focuses on human motivation and the hierarchy of needs. The theory he presents is based upon the notion that motivated behaviours link back to the needs of individuals, discussed in the hierarchy (from lowest to highest): physiological, safety, love/ belonging, esteem and self actualization (Maslow, 1943). He argues that as individuals satisfy needs, they become less important to the individual to satisfy, and as such, new needs dominate an individual's thoughts (Maslow, 1943). For example, once physiological needs (e.g. food, water) are satisfied, a person will then focus on 'safety needs' such as security of health or resources. Typically, people are less satisfied with these needs as they are they get higher in the hierarchy, but the author notes that there are also few occasions where individuals are entirely satisfied with any area of the scale (Maslow, 1943).

2.4.4 Attributes of Successful Stewardship Groups and Initiatives

Undoubtedly, successful stewardship programs are fueled by the passion of staff and volunteers towards a particular project or issue (Neave, 2000). Passion, ethics and personal motivations, however, are not the sole driving forces behind successful stewardship programs. This section identifies traits that are found in successful stewardship programs and organizations.

As Chase and Dunn (2003 p.55) state: "no single stewardship model "works best" in all circumstances". The success of most stewardship programs relates to strong connections to local circumstances. Although there isn't a particular model

for success, there are attributes that have been found to contribute to the success of stewardship programs in most contexts (Table 2.3).

Table 2.3- Summary of re-occurring themes in successful stewardship programs

- Passion/enthusiasm for issue
- Guiding principles established
- Partnerships
- Valuing volunteers and donor contributions
- Trust, cooperation, values
- Participation/engagement of the local community
- Communication (internal and external)
- Adaptive to changes
- Education, outreach to raise awareness and get volunteers
- Innovative and strategic
- Watershed-level approach (at least fits into broader context)
- Participation from a broad range of groups
- Celebrating successes
- Long term funding

2.4.4.1 Guiding Principles

Successful stewardship programs are built upon sets of guiding principles that clearly establish leadership, roles, and include groups from a wide range of backgrounds across a broad geographical scale, and are set at a watershed or 'ecosystem' scale (Chase and Dunn, 2003; Thompson, 2000). In many cases, common goals, work towards solving complex social issues within stewardship groups and partnerships (Hall, 2000).

2.4.4.2 Participation

In situations where stewardship programs are the most effective, programs are developed to promote the engagement of local communities, and are designed to link communities to managing agencies (Imhof and Plummer, 2003). Participation in stewardship initiatives should include people from a wide-range

of backgrounds and interests. Baumgartner (2000) suggests that the most positive results can be found in situations where participation in projects comes from community groups, schools, municipalities and provincial/federal governments, as well as business and industry. Having participants from such a broad range of backgrounds provides a valuable combination of experience, perspective, and resources to a project (Fitch, 2000). It is also important that programs suit the needs of participants involved in the planning or implementation process (Hawboldt, 2000).

2.4.4.3 Partnerships and Communication

Baumgartner (2000) describes successful stewardship programs as ones which reach new audiences, develop strategic partnerships, and make use of non-traditional techniques. To make participation effective, strong partnerships are key to the achievements of stewardship programs (Mulley and Boardley, 2000; Baumgartner, 2000).

Hall (2000) found that partnerships were most successful when mutual respect, commitment, and persistence were combined with proper resources and effective leadership. Partnerships must also emphasize guiding principles and ensure that groups are supported with sound science, technology, and management expertise for program development and implementation (Chase and Dunn, 2003).

Communication is an important facet of effective partnerships and networks (Dunn, 2000). With proper communication between partners and agencies, a

coordinated effort can be made that avoids duplication of programs and can focus resources on common priorities (Dunn, 2000). Successful stewardship programs build up these networks by finding intersections of interest in order to involve new partners (Hawboldt, 2000). Through the development of monitoring mechanisms and measurable tools for all parties to understand and 'see' the progress of stewardship programs, communication can be clear, and conflicts minimized between parties (Fitch, 2000).

2.4.4.4 Innovation, Adaptation and Strategies

Stewardship programs must be creatively designed to be adaptive, while targeting specific groups and audiences (Baumgartner, 2000). Successful stewardship programs are designed to target specific groups, and are able to capitalize on opportunities (Baumgartner, 2000). These initiatives should be designed to strategically fit into broader efforts and programs to make a difference at a landscape scale (Neave, 2000). Stewardship programs which develop and implement action plans that are adaptable to changing conditions also have a higher probability of being successful (Chase and Dunn, 2003).

2.4.4.5 Education and Awareness

Education and awareness-raising are also important elements of successful stewardship initiatives (Baumgartner, 2000). Fitch (2000) emphasizes the importance of raising ecological awareness at the beginning stages of a stewardship project to facilitate community-based actions. Only by building awareness of issues can wise-use and conservation of resources become more ethically ingrained in societies (Mitchell and Brown, 2000).

2.4.4.6 Long-term Funding

In order to ensure the long-term success of a program, funding must be established that is sufficient to sustain program (Chase and Dunn, 2003). Many stewardship programs are challenged by the lack of certainty in future funding sources. Through the provisioning of long-term funding for stewardship programs, sustainable initiatives can be developed and implemented (LEPS, 2003).

2.4.4.7 Valuing Contributions

Above all, volunteers must be valued and acknowledged in order to sustain program implementation and development (Baumgartner, 2000). Neave (2000) emphasizes the importance of the encouragement and recognition of actions that volunteers or landowners make in order to maintain successful stewardship strategies. Not only is the recognition of volunteers important, but organizations must also manage volunteer burnout by setting out realistic expectations and fixing adequate technical and financial support for projects (Byron and Curtis, 2002). Finally, it is also important to promote the accomplishments of an organization or project in order to gain recognition and esteem for work that is successfully completed (Hawboldt, 2000).

2.4.4.8 Social Capital

The concept of social capital has been used by a range of disciplines varying from anthropology to economics. As such, there are a number of existing definitions of social capital. The OECD (2001) offers a network-based definition of social capital which will be applied here. From this perspective, social capital

refers to “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (OECD, 2001 p. 41). Within this definition, trust plays an important role. Interpersonal trust among familiars, strangers and also in institutions can help guide groups and solve collective issues (OECD, 2001).

The OECD (2001 p. 42) identifies 3 basic forms of social capital as follows:

- *Bonding Social Capital*: relations among families and ‘homogeneous’ groups
- *Bridging Social Capital*: relations between distantly associated groups
- *Linking Social Capital*: relations between different social strata and the ability to leverage resources from these groups

These types of social capital are important to distinguish from each other, as they each have a different role to play in the functioning of an organization.

Imhof and Plummer (2003, p. 135) place emphasis on the importance of “people and information” as being the key attributes of successful resource management programs. Group dynamics and learning are of great importance in maintaining the success of projects and organizations. It is through spending time in one place and working together on a program that social capital in stewardship groups can be built (Gooch, 2002). Therefore, trust, cooperation, and knowledge are imperative to developing successful stewardship programs (Imhof and Plummer, 2003; Mitchell and Brown, 2000).

2.4.5 Stewardship and Sustainable Watershed Management

As mentioned in the introduction to this section, stewardship groups and their programs make important contributions to sustainable watershed management. Stewardship provides an important approach to resource management through actions that are deeply rooted in personal ethics. Linking stewardship back to the argument of Dietz and Stern (2002), as it is typically a voluntary action, it is considered a 'new tool' for environmental management. It can be argued that encouraging stewardship encourages behavioral changes. Investigating the motivations of stewards as well as striving to find out more about who joins these groups can facilitate more effective recruitment of volunteers to stewardship organizations.

Many parallels, such as partnerships and adaptive processes, can be drawn between successful stewardship programs and watershed planning. Most of the section on successful stewardship programs (section 2.4.4) was presented as identified by practitioners and coordinators in the field. This provides valuable insight into the structure and application of environmental stewardship initiatives. The final segment of that section mentions elements of social capital such as trust, cooperation, and knowledge. The remainder of this thesis concentrates on learning more about the processes by which stewardship groups operate. To gain a better perspective on the social interactions of successful stewardship groups, communities of practice theory will be applied.

2.5 Situated Learning and Communities of Practice

2.5.1 Situated Learning

Situated learning theory takes a constructivist approach to knowledge and focuses on the importance of social, cultural and contextual aspects of learning experiences. As such, learning is embedded within our participation in activities, and is a function of our relationships with the socio-cultural and bio-physical structures in which we live (Lave and Wenger, 1991; Brown and Duguid, 1991). According to the theory, individual and collective learning cannot be separated, and as a result, learning is a collaborative process (Brown and Duguid, 1991). It is thus important to emphasize that learning, knowledge and meaning are the result of the relationships between an 'agent' and the world, and that these factors are derived from situations which are socially negotiated (Lave and Wenger, 1991).

Knowledge and meaning are continually renegotiated by practitioners in their social practice (Lave and Wenger, 1991). As learning experiences have various stages, Lave and Wenger (1991) raise the notion of 'legitimate peripheral participation' as a means of explaining the initial stage(s) of the situated learning process. In using the term 'peripheral', the authors refer to the importance of gaining access to new situations and learning opportunities, with the opportunity to increase their involvement. This essential stage of learning is often overlooked (Lave and Wenger, 1991). As a legitimate peripheral participant in a practice, one's learning trajectory will often follow the path of increased participation will result in an evolving membership in a community of practice (Lave and Wenger, 1991).

Through the use and application of situated learning theory to social groups, new members can be recruited to groups, and productive connections between individuals, activities and knowing within specific contexts can be developed (Lave and Wenger, 1991).

2.5.2 Communities of Practice

This section examines and reviews literature collected on communities of practice as introduced by Lave and Wenger (1991) and explained in-depth by Wenger (1998).

Communities of practice are everywhere, and are central to our day-to-day activities (Wenger, 1998). A community of practice can be broadly defined as "people sharing their experiences and knowledge in free-flowing, creative ways that foster new approaches for problems" (Wenger and Snyder, 2000 p. 139). They operate as social learning systems where practitioners can connect with others in order to learn and strive to improve their work (Snyder et al., 2004). These groups can be formal or informal; and share knowledge that is both explicit and tacit (Wenger, 1998).

Many of the results of communities of practice are intangible, and thus difficult to determine, but these groups have been found to build relationships, drive strategies, solve problems, promote best practices, and develop skills and programs (Wenger and Snyder, 2000).

Communities of practice theory has been applied in many disciplines such as gender studies, education, business, and knowledge management (Davies, 2005). More recently, communities of practice have been applied to public administration settings (Wenger and Snyder, 2003), and has also been used in natural resource management settings (Pahl-Wostl and Hare, 2004).

2.5.2.1 Core Structural Elements of Communities of Practice

Three core structural characteristics of communities of practice have been identified in the literature: domain, community and practice. To gain a better understanding of what a community of practice is, it is important to discuss these elements and the importance of their interplay in learning.

Domain refers to the focal issues of a community of practice and the sense of members' identity with the topic. Membership in a community implies a commitment to the domain, and members have shared competence that distinguishes them from others (Snyder et al., 2004; Wenger et al., 2002). The domain guides the learning process for members, and is most effective when it pertains to the "passions and aspirations of participants" (Wenger et al., 2002, p.32).

Wenger et al (2002, p. 28) refer to community as the "social fabric of learning". Community, therefore, includes member relationships and the nature of their interactions- including levels of trust, belonging, and reciprocity (Wenger et al, 2002). Relationships are built between members in the interest of their domain and in order to learn from each other (Snyder et al., 2004). Thus, the

community aspect focuses on elements of social capital which lead individuals to develop social networks and relationships which help foster learning (Lesser and Prusak, 1999). Over time, these interactions help build a communal identity (Wenger et al., 2002).

Community attributes vary with the size of the group. Groups with fewer than fifteen members tend to be more intimate, while as group size expands, there is greater differentiation in roles and interests, and in the case of communities with over fifty individuals, sub-groups tend to form (Wenger et al., 2002). Within communities, individuals take on a variety of formal and informal roles, but leadership and/or coordination plays a key role in the success of communities (Wenger et al., 2002).

A community typically encompasses different levels of participation in activities by its members (Wenger et al., 2002, p. 56). This can take the form of 'core' participation in which members take on projects and move the group along with its goal. Active members are generally characterized with regular attendance of activities, but do not participate as much as core members. Peripheral participants are those who rarely participate in activities, and tend to observe actions taken by other members. Beyond this, there are outsiders who do not actively partake in group activities. Wenger et al. (2002, p. 57) state that the "key to good community participation and healthy degree of movement between levels is to design community activities that allow participation at all levels".

Practice consists of learning and knowledge-sharing through a repertoire of innovative tools, methods, and skills. A community may practice in a variety of ways, but in the end, they have a set of accounts, ideas, and cases that become shared repertoire for their practice (Snyder et al., 2004). The base of knowledge, tools, and stories that are developed through practice helps members deal with new situations and evolve with the community (Wenger et al., 2002). Thus, an effective practice involves a balance between joint activities and the creation of knowledge products (Wenger et al., 2002).

These three structural elements together (domain, community, and practice) provide the basic building blocks of a community of practice. Due to the organic and social nature of communities of practice, they can not be mandated, and participation in them must be voluntary (Wenger, 1998), as it is the desire of members to participate and learn that drives a community (Snyder et al., 2004). As a result, these communities cannot necessarily be built, but can be encouraged through the application of proper techniques (Wenger, 1998).

2.5.2.2 Learning Processes in Communities of Practice

Saint-Onge and Wallace (2003, p.15), display a simplified diagram of the learning process in communities of practice; which involves access to knowledge through knowledge objects, and the exchange of knowledge through communities of practice. This process, and therefore the creation of knowledge, relies heavily on relationships (community) that are established through shared values (domain).

Learning takes place as a result of the interplay between community interaction and knowledge (Wenger, 2000). Thus, learning is the result of processes in which knowledge interacts with communities in three main areas: mutual engagement, joint enterprise, and shared repertoire (Wenger, 1998 p.73; Wenger, 2000; Figure 2.3).

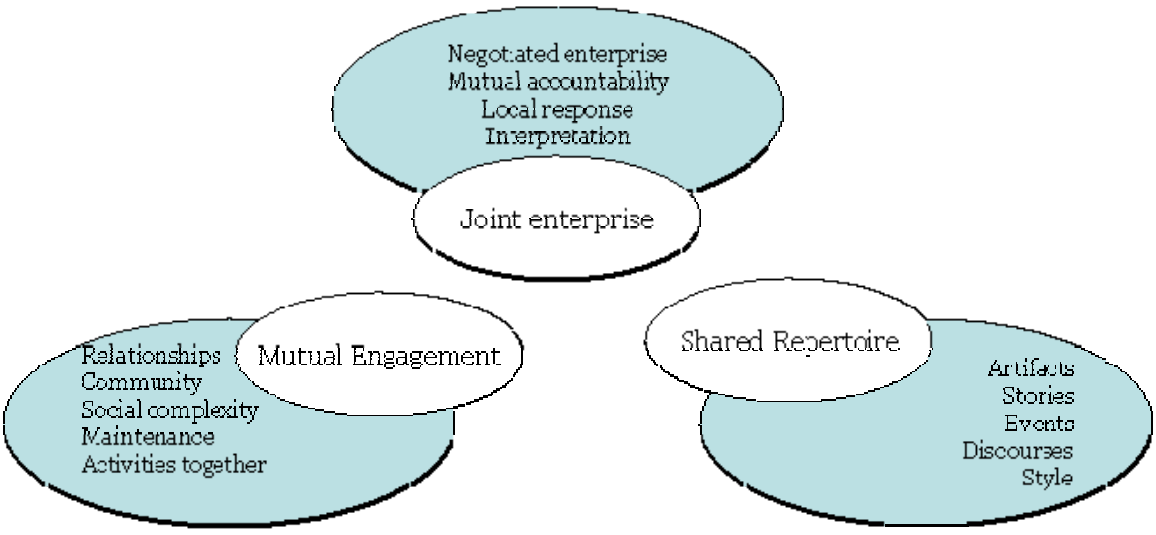

Figure 2.3- Structural dimensions of communities and practice (adapted from Wenger, 1998 p.73)

Members of a community of practice construct their community and learn through mutual engagement. This takes the form of building and developing relationships between people, and establishing identities and roles within a community (Wenger, 1998). Progress in the development of mutual engagement can be demonstrated through the depth of social capital in communities, and in knowing how to address each other effectively (Wenger, 2000). This particular aspect shows an interaction between the domain and community elements of communities of practice.

Joint enterprise is another area which facilitates learning for practitioners. Developing an understanding of and honing their own engagement regarding their enterprise occurs through the process of collectively negotiating what their enterprise is. This helps members become accountable to their community process (Wenger, 1998). Therefore, members of a community gain competence by understanding and contributing to an enterprise (Wenger, 2000). Joint enterprise, therefore encompasses aspects of all three communities of practice core elements.

A shared repertoire results from pursuing a joint enterprise over time (Wenger, 1998). The value of elements contained within the repertoire have a strong collective meaning for the community due to the constant renegotiation process involved in developing the shared repertoire. Aspects of the repertoire vary from tools to stories to language specific to a group's practice (Wenger, 1998). This collective meaning developed through practice is a result of interactions between domain and community.

Communities of practice, therefore, are highly dynamic groups, which are continually reformed through social processes and the renegotiation of values (Wenger, 1998). Practitioners involved in a community of practice are brought together through a shared problem or interest area which they focus on in order to learn more about dealing with the issue. Through understanding each other's stories and concerns, they are able to build relationships and connections with each other so that they can learn and expand their body of knowledge (Wenger,

2004). It is through this forum of interaction and practice that information becomes knowledge (Saint-Onge, 2003).

Knowing comes from participating in these complex social learning systems. According to Saint-Onge and Wallace (2003, p. 64) “knowledge is information that has been placed into context and validated by others who have credibility”. Knowledge comes in explicit forms, which can be articulated, and tacit forms, such as values and beliefs (Saint-Onge and Wallace, 2003). Knowledge is, from the perspective of communities of practice theory, what “human communities have accumulated over time to understand the world and act effectively in it” (Wenger, 2004). Communities of practice, then, are considered to form the social foundations of knowledge (Wenger, 2004).

2.5.2.3 Boundary Interactions in Communities of Practice

Boundaries are important in communities of practice, as they provide the opportunity for groups to be connected and learn from each other. In boundary situations, practitioners are required to bridge gaps between knowledge and organizational norms, and learn about new opportunities for practice (Wenger, 2000; Wenger et al., 2002). Thus, innovation in practice has strong ties to boundary processes.

Learning in boundary areas requires a shared area of interest, ways for competence and experience to be translated and interact, as well as some knowledge of the similarities and differences between communities of practice (Wenger, 2000). Boundaries can be very powerful for gaining insights, but can

also be places where misunderstandings and disconnections occur (Wenger et al., 2002; Wenger, 1998).

Effective boundary management demands coordination, transparency, and the ability to negotiate perspectives (Wenger, 2000). There are several different bridges that can span boundaries. Brokering is done by people who introduce aspects of different practices into another (Wenger, 2000). A challenge of brokering is identifying potential brokers, as these individuals may not have true membership to any one community (Wenger, 2000). Boundary objects are another way to cross boundaries. Boundary objects support connections and can be found in the form of artifacts, discourses, or shared processes (Wenger, 2000). Boundary interactions, such as encounters (visits), connected practices, conversations or the provision of facilities for those on the periphery, are also important in boundary management (Wenger, 1998).

2.5.3 Practical Applications of Communities of Practice and Comparison with other Groups

Communities of practice work in a variety of ways. Table 2.4 shows examples of how communities may develop their practice (Wenger, n.d.).

Table 2.4- Examples of activities driving practice found in communities (from: Wenger, n.d. p 2)

Problem solving	"Can we work on this and brainstorm some ideas?"
Request information	"How can I connect to the server?"
Seeking experience	"Has anyone dealt with this situation?"
Reusing assets	"I have a proposal for a local area network I wrote for a client last year. I can send it to you."
Coordination	"Can we combine our purchases to get discounts?"
Discussions	"What do you think of the new system?"
Documentation	"Let us write down how to deal with this."
Visits	"Can we come and see your after-school program."
Mapping knowledge and identifying gaps	"Who knows what, and what are we missing? What other groups should we connect with?"

Table 2.5 compares and contrasts communities of practice, formal working groups, project teams, and informal networks in order to gain a better understanding of the concepts. Although communities of practice are similar in many ways to informal networks, recognizing the role of passion and commitment to the group's expertise as well as the focus on developing and building capacity in a community of practice is key to understanding differences between group-types (Wenger and Snyder, 2000).

Table 2.5- Comparison of communities of practice with other groups and networks (from: Wenger and Snyder, 2000 p. 142)

	Purpose	**Who are members?**	**What holds it together?**	**How long does it last?**
Community of practice	To develop members' capabilities; to build and exchange knowledge	Members select themselves	Passion, commitment, and identification with the group's expertise	As long as there is interest in maintaining the group
Formal working group	To deliver a product or service	Everyone who reports to the group's manager	Job requirements and common goals	Until the next reorganization
Project team	To accomplish a specific task	Those assigned to be involved	The project's milestones and goals	Until the project is completed
Informal network	To collect and pass on information	Friends and those acquainted with the topic(s)	Mutual needs	As long as people have a reason to connect

2.5.4 Criticisms of Communities of Practice Theory

As communities of practice can take many forms and are spontaneous in nature, they can be vulnerable due to a lack of legitimacy in an organization (Wenger and Snyder, 2000). Communities of practice also rely on individual motivation, and cannot be mandated by organizations (Breu and Hemmingway, 2002; Wenger, 1998). This also connects to the fact that communities take time to develop and evolve, and outputs/benefits may not be immediately apparent (Wenger, 1998; Breu and Hemmingway, 2002).

Wenger (1998) does not explicitly state any techniques that encourage innovation in practices. Although they play an important role in communities of practice, innovation and other components of communities of practice, may be too costly for small and medium sized organizations (Roberts, 2006; Wenger and Snyder, 2000).

Roberts (2006) states that communities of practice are most likely to be present in cultures that have a strong sense of community spirit. Many organizations work together towards certain goals, but have internal hierarchies and competition that may prevent communities of practice from flourishing (Roberts, 2006; Davies, 2005). Communities of practice are, therefore, best suited towards settings where people in the organization have a high level of autonomy. Even if a community of practice has autonomy among members, members may not allow other people to join a community, thus making it exclusive (Davies, 2005). This poses a fundamental problem to the arguments for identity by Wenger (1998).

2.5.5 Designing a Community of Practice

Organizations need to learn how to foster and participate in communities of practice both in and outside of organizational boundaries in order to promote innovation and learning within their structure (Wenger, 2000). As already mentioned, communities of practice cannot be mandated by managers, but they can be encouraged when the right people are brought together with support (Wenger and Snyder, 2000).

Sponsors or supporting organizations must encourage communities in a way that permits members to have the time and for the community to have the organizational legitimacy to realize its potential (Snyder et al., 2004). To develop and manage these systems, organizations should encourage the informal learning which is characteristic of communities of practice (Wenger, 2000). It is also important to provide linkages and communication channels for communities of practice at the local and broader scales (Wenger, 2000; Wenger and Snyder, 2000).

Wenger et al. (2002 p.51) suggest seven principles for designing communities of practice:

1. Design for evolution
2. Include open exchange with other perspectives
3. Invite different levels of participation
4. Develop both public and private community spaces
5. Focus on value
6. Combine familiarity and excitement
7. Create a rhythm for the community

These design considerations include the need for excitement in the sharing of information (Wenger et al., 2002). Without such opportunities, the voluntary nature of communities of practice may result in members dropping out, and thus the collapse of a community.

To compliment the above mentioned design principles, Wenger (2000 p.230-232) suggests the following considerations to cultivate communities of practice:

- Events that help to define community identity (should be adjusted as the community changes)
- Leadership (internal and in multiple forms)

- Connectivity with other communities
- Membership that encourages building of interest, and allows newcomers without diluting the process
- Learning projects/agenda
- Artifacts which represent the community direction

Through tailoring design methods to the purpose and goals of a community of practice, there are opportunities to expand learning and knowledge sharing opportunities within organizations. Strong leadership should be a core focus when a community of practice is being developed (Wenger and Snyder, 2004). This leadership may take the form of community coordination, support teams, and overall executive guidance, all of which are key for successful participation and effectiveness for a community of practice.

2.6 Conceptual Framework

Since this research merges two areas which have not previously been studied together (Communities of practice and environmental stewardship), elements from the literature have been combined in order to develop the following conceptual approach for the research. The framework, shown in Figure 2.4, focuses on communities of practice theory within a stewardship context, with a focus on learning.

The literature on stewardship indicates that there are a variety of reasons why individuals join environmental stewardship groups. Typically these have been broadly grouped into altruistic and self-benefiting motives for initially joining environmental groups (Donald, 1997; Ryan et al., 2001). These motives

contribute to the ability of a group to develop a shared vision and passion for their work.

In general, voluntary stewardship groups, much like communities of practice are intended to be inclusive and open groups with membership open to all individuals who are interested in being apart of the group. Within this, various levels of participation are recognized. These factors as well as the fact that members of communities of practice (and stewardship groups) tend to be members of multiple groups, the boundary for the stewardship community of practice is difficult to define (Wenger, 1998) and is thus represented as a dashed line in the framework. The arrow indicating connections and partnerships with other groups goes two-ways, as exchanges are typically reciprocated between individuals and groups in order to facilitate learning and practice within a community of practice.

The core areas of investigation for this research are learning, domain, community and practice (as discussed earlier in this chapter). It is evident from the literature that these areas cannot be viewed in isolation, as they all interact in order to strengthen one another. According to the theory, the learning process is primarily based on social interactions with other participants, and experiences that participants have as a result of their practice (Saint-Onge and Wallace, 2003; Wenger, 1998). This process is cyclical as the types of questions that are asked are the result of learning that occurs for individuals. As learning occurs, social ties within the group are strengthened as a result of their learning and refining of their practice (Wenger et al., 2002).

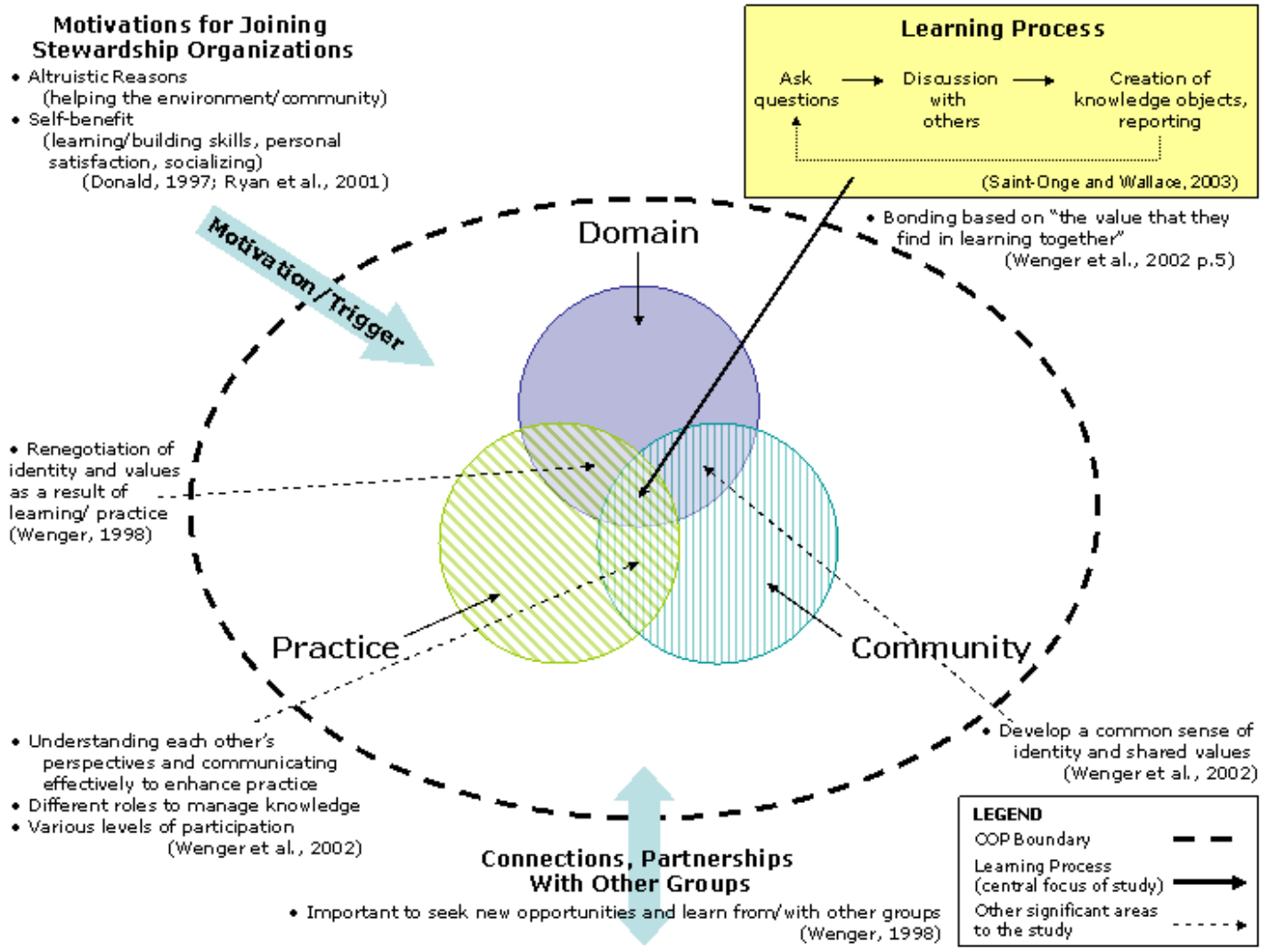

Figure 2.4- Conceptual Framework for thesis research

In areas where each of the three core structural areas of a community of practice overlap, certain processes occur. For example, where domain and community meet, individual group members develop a collective identity and shared values. In the case where practice and community overlap, members of a community of practice develop an understanding and means of communicating with one-another, various levels of participation and roles are also noted. For the area where practice and domain intersect, the results of practice and learning

result in a renegotiation of the identity and values which both individuals and the group hold (Wenger, 1998).

The resultant conceptual framework will be used in the following chapters to focus this research on the elements of communities of practice which are found in environmental stewardship organizations.

2.7 Chapter Summary

Learning and sharing knowledge have vital functions in natural resources management. Recent trends in natural resources management have indicated that these social aspects of resource systems are being considered more seriously by planners (Woodhill and Rölling, 1998; Pahl-Wostl and Hare, 2004). The importance of an adaptive approach to management and programming is found throughout the literature on sustainable development, watershed planning and stewardship. Embedded in the nature of adaptive management are social learning processes that are imperative for sustainable resource management initiatives. Therefore, understanding the dynamics of these groups and their learning processes holds a high-degree of significance for developing successful natural resources management efforts.

Communities of practice theory offers insight into the participatory learning process required for resource management (Pahl-Wostl and Hare, 2004). To understand the social processes associated with successful stewardship initiatives, the communities of practice structure and design principles identified in the literature are applied in this thesis.

Through this chapter, it is evident that this research has multiple implications as it merges two emergent study areas found in the literature: communities of practice and environmental stewardship groups (as demonstrated in the conceptual framework). This study aims to identify characteristics that can enhance stewardship organizations and programs, and ultimately, to find means to improve community-based environmental management.

Chapter Three: Methodology

This chapter outlines the research design and methods that were used for this study. It begins by reviewing the rationale for the broader research design, and is followed by the details of the specific research methods that were applied. The case study context and background for groups will be described in the following chapter.

3.1 Qualitative Research

Communities of practice are complex systems, which require an in-depth study of participant perceptions regarding their activities and social processes. This study takes a qualitative research approach to explore communities of practice in stewardship organizations.

A qualitative approach to research can be highly exploratory, taking an empirical approach to answer questions which are located within specific social contexts (Kirk and Miller, 1986). The procedures taken using a qualitative approach help the researcher access information that isn't quantifiable, which is key to understanding the research problem. The researcher shares the learning, understanding and perceptions of the participants (Berg, 2001). Thus, the researcher becomes a research instrument, with personal thoughts embedded in observations and analysis (Creswell, 2003).

Qualitative research should be systematic in order to be replicable by future researchers (Berg, 2001). In designing research that employs multiple methods,

the researcher is able to secure a more in-depth understanding of the research subject, and thus improve the validity of their research (Kirk and Miller, 1986; Denzin and Lincoln, 1998). The following sections of this chapter will describe and justify the methods taken for this research.

3.2 Strategy of Inquiry: Case Study

Qualitative researchers often employ case studies as a strategy of inquiry (Creswell, 2003). Case studies can be used to answer "how" or "why" questions, and are also used in studies which focus on contemporary issues in real-life situations (Yin, 2003). Furthermore, case studies can help researchers "understand complex social phenomena" (Yin, 2003, p.2), such as the social processes and learning that play an important role in communities of practice. A major advantage of applying a case study approach lies in the ability to open-up the possibility for discovery (Berg, 2001).

A number of data-collection techniques are employed in case study strategies. The data are typically rich and in-depth, focusing on the experiences of participants in the study (Berg, 2001).

This research focuses on the instrumental case study. Instrumental case studies focus on providing insight into issues or theories that are being studied (Stake, 1995). With instrumental case studies, the case itself is used as a background to describe a theory or broader issue (Berg, 2001).

This study investigates communities of practice theory in environmental stewardship groups, focusing on the Pacific Streamkeepers Federation (PSkF) in British Columbia. It takes a nested approach, investigating three groups which fall under the PSkF as an umbrella organization.

The researcher chose to conduct the study with the PSkF due to her previous experience and familiarity with Streamkeepers groups, and having worked as a Streamkeeper on two occasions in the past. Further information on the case will be presented in the following chapter.

3.3 Research Design

3.3.1 Design and Preparation

Several informal discussions with ZoAnn Morten from the PSkF were used in identifying study groups and honing research questions. Through these discussions, three Streamkeepers groups were identified as appropriate for the study.

As each group is unique and the number of members of Streamkeepers groups can vary greatly, the sampling strategy included the investigation of the activities of communities of practice according to three main factors: the relative success of their programming, their location within the same general geographic area, and group size.

The selected groups all fall within the region for the North Side of the Fraser River (Burnaby to Mission) Department of Fisheries and Oceans Canada (DFO)

Community Advisor (CA). All of the groups work in different areas of the Greater Vancouver Regional District in: Coquitlam/Port Coquitlam (Group 1), Burnaby (Group 2), and Maple Ridge (Group 3) (Figure 3.1). In order to fulfill the initial study objectives to compare and contrast communities of practice between Streamkeepers groups of different sizes, the three groups were chosen according to the size of their membership: small (Group 1, under 15 members), medium (Group 2, 15 to 40 members), and large (Group 3, over 40 members).

Figure 3.1- Map of the Greater Vancouver Regional District study areas (Source: http://www.mapcl.org/Program-Brochures-Websites.html)

Details and a profile on each individual Streamkeepers group will be further discussed in the next chapter.

3.3.1.1 Sampling Strategy

Between 5 and 6 interviews were conducted with members of each Streamkeepers group chosen for the study. The researcher began by contacting the organizing contact (as recommended by the PSkF) for each group for an

interview. In interviews, organizers were requested to recommend group members who are considered: group leaders, core members, new members, long-term members, or peripheral members of the group. In the case where group organizers were unable to present the researcher with sufficient contact information for members, the researcher asked subsequent interviewees to identify individuals, thus resulting in a snowballing sampling technique (Berg, 2001). In most cases, individuals who were receptive to interviews were active or core members of the group. In only a few cases did the researcher feel that she spoke with peripheral participants.

3.3.2 Data Collection

This research involved the use of several methods in order to gain an understanding of communities of practice within Streamkeepers groups. In using multiple-methods, the validity of the study is increased.

Due to the fact that communities of practice have both explicit and implicit elements to them, it is not possible to measure all aspects of a community. As Wenger and Snyder (2003 p.45) state: “useful attempts at measuring the value of a community do not purport to measure everything, but to give a sufficient account of value creation to satisfy the needs of various stakeholders”. In acknowledging this, the research focused on several areas relating to communities of practice. The following sections will describe details of the interview and field visit data-collection methods which were applied for the study.

3.3.2.1 Semi-Structured Interviews

Interviewing can be a powerful tool in the collection of qualitative data (McCracken, 1988, Stake, 1995). Benzie et al. (2005) suggest the use of in-depth interviewing, with a focus on group relationships and activities as a key method to use in the investigation of communities of practice.

Due to geographical constraints, semi-structured telephone interviews were the primary method of data collection for this research. The interviews used some pre-determined questions or topics, but the semi-structured approach was chosen to provide the researcher with flexibility in asking questions, probing for answers, and tailoring questions for the interviewee's understanding (Berg, 2001). A key advantage of the use of the interview questions is to have consistency and direction for the interviews; and in using open-ended questions, the respondents are able to provide exploratory and unstructured responses (McCracken, 1988).

During interviews, the researcher would help guide and probe interviewees to understand and answer questions, but made an effort to balance this with having participants answer questions from their own experiences and perspectives in order to minimize skewing of the data (McCracken, 1988).

<u>Interview Process:</u>

Potential interviewees were contacted using information provided by the group leader. In most cases, an interviewee would be sent a recruitment email, followed by a phone call requesting an interview time. Prior to interviews,

participants were given the opportunity to review interview questions, and were also provided with informed consent forms, as required by the University of Guelph Ethics Review Board (Appendix 2). They were given the opportunity to ask questions and raise concerns about the research. Before commencing interviews, each participant gave informed consent in order to be a part of the study.

Interviews ranged in length between 45 minutes to three and a half hours, with the typical interview taking one and a half hours to complete. Each interview was commenced with an introduction of the study and the opportunity for the interviewee to become more comfortable with the researcher. In most cases, interviews followed the questionnaire as a guideline, often with interviewees touching upon multiple interview topics in one question. In several interviews, the interview became an unstructured discussion about Streamkeepers groups, which also proved to be a very valuable means of obtaining information and insight from participants.

In all instances telephone interviews were conducted, and the researcher transcribed interviews by typing while the interview was being conducted over the telephone. Following the interview, the researcher recorded her thoughts and notes on each interview to ensure that no data was lost.

In total, 17 interviews were conducted: 5 interviews for Group 1, and 6 for Groups 2 and 3.

Interview Structure and Topics:

Wenger and Snyder (2003 p.45) suggest that research on the 'value' of a community of practice should involve collecting stories on group actions and activities that help to "trace the linkages that connect community activities and performance outcomes". In doing so, elements of communities of practice can be seen in the steps taken by groups. In order to address the need to hear stories and make linkages, the interview questions had an open-ended structure, and the researcher encouraged stories and elaboration on aspects of Streamkeepers activities.

This research focused on the three core structural elements of communities of practice (from Snyder et al., 2004 p. 2):

- ***Domain*** refers to its focal issues and the sense of members' identity with the topic
- ***Community*** includes its member relationships and the nature of their interactions—levels of trust, belonging, and reciprocity
- ***Practice*** consists of a repertoire of tools, methods, and skills—as well as members' learning and innovation activities

Within these three core areas, 14 questions were asked of interviewees to emphasize each of these areas within the Streamkeepers groups. A copy of the interview questions is provided in Appendix 2.

3.3.2.2 Field Visits: Participant Observation

Benzie et al. (2005) suggest that researchers studying communities of practice engage in a combination of in-depth interviewing and immersion in the community. Due to the nature of the time and geographical constraints related to the study, the researcher was unable to immerse herself in the three groups

studied. In order to ensure some group contact, one-time field visits and participant observations were used.

The researcher attended a group-related event for each of the groups involved in the study. These field visits were used to supplement data collected from interviews, and to investigate the communication-styles and social dynamics of group members when they are engaged in practice. In each case, the researcher attended the events, and participated in the activity. Following the completion of the activity, the researcher transcribed her notes from the event.

For Group 1 and Group 2, the researcher was able to join for broader group-related activities- a Saturday morning creek visit/breakfast, and a monthly meeting/Christmas potluck, respectively. Group 2 invited the researcher to join their list-serve, a main means for group communication. For Group 3, due to time constraints and weather issues, the researcher was unable to attend a full-scale group event with a broad-range of membership. Instead, the researcher attended a school program led by two paid members of the Streamkeepers group.

Although each of activity was very different, they provided the researcher with an excellent opportunity to have face-to-face contact with individuals, and to observe both implicit and tacit elements of Streamkeepers practice.

3.4 Analysis and Interpretation

Following the completion of the interviews, an analysis of interview content was conducted. Interviews were coded so the researcher could recognize patterns and interpret information found within the data. To ensure transparency in the process, the researcher strove to develop an explicit coding system and to maintain consistent judgment throughout the process (Boyatzis, 1998).

Open coding was used for the initial analysis in order to search for unanticipated themes and patterns which emerged from the data (Berg, 2001). This was used to decrease the bias in the research from the theoretical literature upon which this work is founded. Following the open coding process, axial coding was used to perform an in-depth analysis around the communities of practice themes and categories (Berg, 2001).

Following an initial coding process, coded data was inputted into spreadsheets and analyzed according to broad themes. The data were then compared and contrasted between groups, gender, age and participation-level to review and interpret the findings. The interview data were reviewed in conjunction with observational data to supplement any gaps with respect to the core concepts of communities of practice in the interview findings.

3.5 Limitations of the Study

The researcher acknowledges that there are several limitations with this research, many of which have already been touched upon in this chapter. The

first major limitation of the research is the ability to generalize the case study to broader contexts. Although this limits the extent to which research can be applied in other contexts, case studies provide a strong understanding on issues and how they function within certain settings (Stake, 1995). As case studies are highly context dependent, it is important for researchers and readers alike to take this constraint into consideration. Due to the fact that this research is exploratory in nature, lessons learned about communities of practice in Streamkeepers groups will be used to inform future research and understanding with an awareness of this context.

A second limitation is in the depth of inquiry into each of the Streamkeepers groups. Due to time, resource and geographical constraints, the researcher was unable to interview all members of each group, and was further only able to attend one event for each group. Due to these factors, the researcher obtained contact with a limited number of participants in each group, many of whom are active members of groups. This issue re-emphasizes the exploratory nature of the study, and should be considered in future research design that addresses more ethnographic approaches to investigating the study problem.

Researcher bias was also taken into consideration for the study. As the researcher has had previous experience as a Streamkeeper in groups outside of the study, she came into the study with preconceived notions of Streamkeeping, and thus had to remain conscious of her role and biases at all stages of the research.

The final notable limitation is the role of the researcher as an outsider in research. This brings up the issue of establishing rapport and gaining the trust of study participants. This issue is a typical of concerns in qualitative research. In an effort to overcome issues of being an outsider, the researcher attempted to build trust and familiarity with interviewees at the beginning of interviews. Similarly, in conducting participant observations, the researcher participated in group activities rather than remaining as an outside observer, and thus was able to work with group members in order to get a better understanding of their activities.

3.6 Reliability and Validity of the Study

Using the qualitative approach to research, this study is empirical in nature, basing findings on observations from interviews and participant observation techniques. This research takes this approach in order to develop an understanding of the study questions- focusing on the nature of learning in stewardship groups rather than quantity or amount of learning in the groups (Kirk and Miller, 1986).

According to Kirk and Miller (1986, p. 19) “reliability is the extent to which [research] gives the right answer however and whenever it is carried out”, whereas “validity is the extent to which it gives the right answer”. The authors continue to argue that reliability (which is associated with replicability) relies on explicitly stated methods and observational procedures. Validity depends on the investigation itself; focusing on the types of questions that are asked, the clarity

in coding data and using a diversity of methods in order to strive for data that is legitimate for the research question (Kirk and Miller, 1986 p. 21).

Although case study research can be difficult to replicate, this research uses several investigative methods in order to ensure a high level of validity for the data collected in this study. By interviewing 17 individuals with open-ended questions, having multiple interviewees answer a question similarly provides a convergence of evidence. Similarly, by interviewing individuals and having them explain phenomena in their own terms results in definitive, rather than inferential evidence on issues raised in interviews. This study, therefore, has strong explanatory power due to the use of participants' own thoughts and ideas to address the research question.

3.7 Chapter Summary

This chapter detailed the methodology being applied to investigate communities of practice in stewardship organizations. A qualitative approach was taken to three Streamkeepers groups for the case study. A combination of methods including semi-structured telephone interviews and participant observations were used in order to increase the validity of the study. In all, 17 individuals were interviewed, and three site visits were made.

Data were analyzed using open coding to identify general themes, and axial coding from the literature. The following chapter will provide general background information on each of the studied groups, and the data will be provided in Chapters Five and Six.

Chapter Four: Context and Case Study Background

4.1 Salmon Conservation and Stewardship in BC

Pacific salmon are considered a keystone species in British Columbia, and play important ecological, economic and cultural roles in the Province. Over the past few decades, there has been a noted increase in public concern over the conditions of stocks along the coast. These concerns are not unfounded. According to the David Suzuki Foundation (DSF), "in BC alone, 142 stocks have gone extinct over the past few decades and another 620 are at risk of extinction" (2006, p.1).

One of the greatest factors leading to this decline is the degradation and loss of habitat (DSF, 2006; Harvey and Greer, 2004). Many factors contribute to this loss of habitat. In rural areas, poor forestry practices (and issues now stemming from the mountain pine beetle epidemic), industry and agriculture have typically been blamed for habitat loss. In more urban areas, development and industrial activities have had major impacts on salmon habitat.

Over the years, changes in government policy at the federal and provincial levels have had an impact on community-led salmon stewardship initiatives in the Province. Between 1992 and 2002 there was a boom in community salmon stewardship in BC due to high funding levels from both the federal and provincial governments (Harvey and Greer, 2004). Over the past five years, however, this funding climate has declined, and government efforts have shifted focus towards SARA (Federal *Species at Risk Act*) requirements and away from the habitat

restoration efforts which had been concentrated on previously (Harvey and Greer, 2004).

The over-arching DFO stewardship model, however, is still being applied to support stewardship groups. This model links community groups to government expertise through Community Advisors, who are responsible for certain areas of the Province. Each CA has a distinct style of advising groups, and likewise, in each area groups tend to have different demands, making the system unique in each area of British Columbia (Harvey and Greer, 2004).

Due to the nature of the salmon resource, salmon stewardship groups tend to be "a far more diverse crew than the old-style crusaders for charismatic species like snowy owls and marmots" (Harvey and Greer, 2004, p.19). Instead, stewardship groups focusing on the salmon resource tend to include a variety of interest groups ranging from school children to fishers to First Nations. The remainder of this thesis will focus on the Pacific Streamkeepers Federation, and the three selected groups within it as examples of salmon stewardship in British Columbia.

4.2 Case Study: The Pacific Streamkeepers Federation

The Pacific Streamkeepers Federation (PSkF) was founded in 1995. On the Federation's webpage (www.pskf.ca), they refer to themselves as "a non-profit society helping Streamkeepers take action through support, education, and building partnerships" (PSkF, 2006).

The PSkF took over as the coordinating body for the Streamkeepers program that was initiated by DFO in 1993 to build the skills of volunteers to help increase awareness, collect data, identify problems within streams and watersheds, alert appropriate authorities to problems, and aid in restoration and enhancement projects (Clermont, n.d.). In doing so, the PSkF acts as an umbrella organization to over 100 Streamkeepers groups throughout British Columbia (Morten, 2006). It also provides training for Streamkeepers groups in partnership with DFO and Capilano College, and is responsible for the sales of *The Streamkeepers Handbook* and Modules (Clermont, n.d.). This training has provided thousands of volunteers with the skills needed to monitor and improve their local watershed conditions throughout British Columbia (PSkF, 2006).

The PSkF and the Streamkeepers have been very successful in their work through the number of individuals trained, maintained, and the number of local projects that have been completed throughout the Province. Due to the researcher's previous experience working with Streamkeepers groups, the researcher felt that Streamkeepers would provide an excellent example of successful stewardship groups for this research on communities of practice.

The following section outlines basic information that was obtained from interviewees and group websites during data collection. It is important to note that the information obtained on group history, participant numbers and activities varied slightly between interviewees who addressed these issues. The data presented in this section is intended to give the most accurate representation of these points.

4.2.1 Group 1

Group 1 was one of the first formally established Streamkeepers groups in BC. It was established around 1991, but as with many creeks, Streamkeeping-related activities in the creek were happening before then. The creek that the group focuses on flows through the cities of Coquitlam and Port Coquitlam- these areas have been marked by high development pressures that have led to impacts on the creek, which is a tributary of the Coquitlam River.

The smallest of the study groups, Group 1 consists of approximately 15 members, between seven and nine of those members are considered the 'core' group. One member holds the formal position of chair. On their website, the group refers to themselves as "an environmental stewardship group dedicated to [the creek's] protection, rehabilitation and restoration". Group 1 engages in a variety of Streamkeeping activities which are shown in Table 4.1.

4.2.2 Group 2

Group 2 focuses most of its local efforts on a small tributary of the Fraser River which runs through an urban watershed in the City of Burnaby. The group was brought together following a meeting about a major fish kill in their creek in the summer of 1998. Group 2 was formed as a Streamkeepers group in April of 1999. Prior to this, members of the Vancouver Angling and Game Club had been working on the creek since the late 1980s. The formation of the Streamkeepers group involved support from the City of Burnaby, the Vancouver Angling and Game members as well as concerned members of the public.

Currently, Group 2 is a mid-sized group with membership totaling approximately 40 people. Of these individuals, 20 are considered active members, 15 regularly participate in activities, and an additional five occasionally join the group. Within the group of active members, three concentrate on communications, one of whom also holds the chair position for meetings. Group 2 is involved in a range of activities, which are summarized in Table 4.1.

4.2.3 Group 3

Located in the District of Maple Ridge, Group 3 focuses their efforts on a tributary creek of the Fraser River. This non-profit NGO has a unique set-up, as they work closely in conjunction with the GVRD and DFO as their operations are based within a GVRD Park, and they manage the contract to operate the hatchery located in the park. The initial group meetings began around 1994, but Group 3 didn't become an official society until 1998.

The Mission Statement of Group 3 (as stated on their website) is: "To maintain the health of the […] Creek watershed's natural ecosystem through education, community involvement, scientific research, land preservation and partnerships based on stewardship principles."

The largest of the three groups being studied, Group 3 has a membership of over 50 individuals, with a core group of eight members and 10 regular participants. Most of the other members are kept informed of activities and may occasionally participate. This group is slightly more structured than the others, with eight

people on the Board of Directors (the core group), and several contract employees running education programs and the hatchery. Group 3 also has a paid part-time coordinator position to help the board with communications and activities (the member holding this position is also a contract education employee). The group focuses most of their activities on education, but engages in others as well (Table 4.1).

Table 4.1- Group activities listed by participants during interviews (please note, activities are not necessarily listed in order of activity frequency)

Group 1	Group 2	Group 3
• Watershed advocacy • Direct action/education programs • Community outreach and stewardship • Community events • Watershed and municipal planning • Watershed monitoring • Habitat enhancement • Creek clean-ups • Fundraising • Landowner contact	• Education programs • Community improvement/ public art • Community events/ presentations • Watershed monitoring • Annual status report • Watershed advocacy • Habitat enhancement • Creek clean-ups • Media relations	• Education programs • Summer youth camps • Community events • Hatchery operation • Watershed monitoring • Watershed advocacy • Multi-stakeholder workshops • Habitat enhancement • Landowner contact • Meetings: AGM • Strategic planning • Fundraising • Creek clean-ups

4.3 Chapter Summary

Chapter Four provided background on the context of the study. The first segment of the chapter reviewed the historical and current status of salmon stewardship in British Columbia. Following this, information collected from members of Groups 1, 2 and 3 was given in order to introduce the reader to each group for the following Findings chapter.

Chapter Five: Findings

The Findings chapter provides the results from the interview and participant observation methods. This chapter is divided up into four main sections outlining the framework for the organization of the results, the findings from each of the three groups, and chapter summary.

5.1 Framework for the Organization of Results

In general, the findings presented in this chapter are organized according to the elements mentioned in the conceptual framework in Chapter Two. Each section begins with a brief background on each group, outlining basic information on the individuals who were interviewed. The initial background provides information such as gender distribution, length of involvement in the community and watershed and length of membership in the group. This is followed by information on the number of volunteer groups that interviewed members have been involved in during the past, indicating the level of commitment to volunteerism that group members have (Donald, 1997) and also the connection to other groups and potential communities of practice (Wenger, 1998). As no specific demographic data were collected for the study, demographics are not included in the findings nor analysis of this thesis.

For each group, the analysis is organized to look at key attributes of stewardship and communities of practice at the individual- and group-levels. This is done to gain a better understanding of implications of activities for people involved in

activities from a personal perspective as well as to investigate the group as a collective whole.

At the individual level, the analysis is laid-out to examine the following key concepts relating to communities of practice and stewardship: learning, domain, community, and the perceived values and benefits for individuals participating in Streamkeepers groups. Learning is a focal point of communities of practice theory (Wenger, 1998); and the section on learning is divided broadly into sections that outline the topics, sources of information, and ways of learning for Streamkeepers members. The analysis of the domain of individuals in groups focuses on the identity of individuals as Streamkeepers. To address identity, individual definitions of a 'Streamkeeper' are presented; and interviewees answers to questions about whether they see themselves as a Streamkeeper, and if they think others view them as a Streamkeeper are included in the findings. This is intended to investigate the identity of Streamkeepers, another key part of communities of practice theory (Wenger et al, 2002). The domain of individuals also covers questions with respect to individual motivations for joining groups and how those motivations have changed since they joined. Individual expectations for participation in their group are also analyzed under the individual domain section- this looks at the alignment of individual values and goals within a group.

Community at the individual level analyzes the personal relationships that are developed between individuals and the social aspects as a result of participation in Streamkeepers. This exemplifies the relationship of individuals to their

community. These relationships are central to the healthy functioning of a community of practice (Wenger et al., 2002). Finally, the individual level of analysis looks at the perceived benefits and values that participants felt were important results of their Streamkeepers experiences- an important factor for groups, coordinators and managers to consider (Ryan et al., 2001).

The group-level analysis examines the communities of practice framework in terms of the implications for the group itself- the areas analyzed include learning, domain, community and practice. This emphasizes the relationships of the group as an entity. The section on group-level learning investigates the implications of learning with respect to changes in the group, tools that are used to direct the group and particular events or learning opportunities that impact them. This is included due to the collective nature of the learning process which was described by Brown and Duguid (1991). Domain, in this portion of the analysis examines the sense of shared identity between group members and the alignment of member's perceived goals for the group.

Group-level community attributes look into factors such as the roles and structure of the group, recruitment of new members, and the events contributing to the social forums for the group. This social fabric is imperative to maintaining a community of practice (Wenger et al., 2002).

The section on practice investigates factors on practice as outlined by Wenger et al. (2002) including shared projects, language and a sense of pride or commitment to their collective work. A list of activities that each group carries

out is listed in the previous chapter in Table 4.1. Communication both between group members and between the group and external groups is also examined to understand how information is shared. The practice section also includes information gathered on boundary interactions and partnerships- with information on what groups they work with, and the nature of these relationships.

5.2 Group 1 Findings

Five individuals, one female and four males, were interviewed from Group 1 (n=5 interviewed, approximately 33% of group). Many of the individuals have had long-term involvement in the watershed, with two members who stated that they have been involved for approximately 30 years, another two who have been active in the area for between 15 and 20 years, and the youngest member who stated that he has been involved for three years. The interviewed members have had membership with Group 1 ranging from three to 15 years, with most members having been members for nine to 11 years.

The interviewed members of Group 1 indicated that members of the group have a strong connection to volunteering. All members have at one time or another been involved in at least one other volunteer group, with most members having been members of several groups over time. One member indicated that she has been involved with over 22 volunteer groups during her life.

5.2.1 Group 1: Individual Streamkeepers

5.2.1.1 Learning

Overall, the individuals in Group 1 felt that learning occurs as a result of their interaction with other Streamkeepers and their participation in Streamkeeper activities. In one case in particular, the response to the question was simply "Learning is HUGE" (*Group 1, Female, Member for 9 years*), indicating that learning through membership in Streamkeepers has a high meaning for some members of Group 1. Another member pointed out that learning is inherent when one is a member of a group.

> "When you are associated with a group you always learn something" Group 1, Male, Member for 11 years

Members of Group 1 spoke about a variety of areas in which they learn. Some people spoke about ecosystem functioning and fish behavior when they discussed learning. Another member touched upon the notion that he learns about the tools and techniques which Streamkeepers can use in order to restore and enhance watersheds. Others mentioned that they learn about individuals and the social dynamics of the group.

> "You learn about people, not necessarily from them" Group 1, Male, Member for 15 years

In the case of the youngest member of the group, he mentioned that being a member of Streamkeepers has helped him learn how to better relate to adults. Several members touched upon the fact that they have ended up learning more about working with bureaucracy, specifically working with the cities in their watershed. In both of the cases where individuals spoke about the municipalities which they work with, they expressed frustration with respect to how the city

makes decisions and their relationship with the group as the source of their learning.

A final comment on learning topics that was raised during the discussions highlights the somewhat tacit nature of learning for some individuals in Streamkeeping. As this particular member is involved in multiple groups, and is a long-time member of Group 1, and therefore has learned a lot about the explicit aspects of Streamkeeping and his group, it is possible that the learning which he mentioned may have implications for other long-term (and short-term) members as well.

> "I cannot pinpoint something, but I do learn" (Group 1, Male, Member for 11 years)

Members of Group 1 spoke about many different means by which they learn. A few members spoke about making observations about the creek and fish as a way in which they learn. Similarly, one member spoke about his long-term monitoring of the creek which he records in a diary as a source of learning. One member also spoke about learning from other group members and their styles a way in which she learns - indicating the social nature of learning (Brown and Duguid, 1991).

> "You learn from people's styles and things that you want to emulate" (Group 1, Female, Member for 9 years)

Attending events and relating with other groups is another means by which several members of Group 1 felt that they learn. Another key area which was

mentioned by one member is getting support from the PSkF, and obtaining information in a personalized form from the organization.

5.2.1.2 Domain

Identity:

When asked about whether they view themselves as Streamkeepers or not, all members of Group 1 stated that they felt that they are Streamkeepers. All five of the interviewees also felt that others view them as a Streamkeeper- this shows that these individuals have strong identities as Streamkeepers. Several individuals pointed out that their efforts as Streamkeepers have been recognized by others through environmental awards. Other members included that they have multiple identities, citing membership in other groups as well as their identity through other skills and interest areas.

> "Quite a few people would see me as an environmentalist too, and there is a crowd of people who see me as an historian too" (Group 1, Male, Member for 10 years)

In asking members of Group 1 how they define a Streamkeeper, they were fairly inclusive in their definitions. Most people felt that a Streamkeeper is anyone who has a concern for the environment or the general health of the creek or watershed, exemplifying the inclusive nature of the group. Only one member felt that it was necessary to specify that a Streamkeeper must be active in protecting or working on the creek.

One member pointed out that defining a Streamkeeper is difficult, as there are many different reasons why people join Streamkeepers.

Motivations and Evolving Reasons for Membership:

For the majority of interviewees in Group 1, they expressed altruistic reasons for joining their group and becoming involved in Streamkeeping activities. Several members of Group 1 originally joined the group due to their previous involvement in the fishery. As these members pointed out, there is a need to give back to the resource once you have taken from it.

> "I used to commercial fish- you are taking without replacing. I thought that you should be working both ends of it" (Group 1, Male, Member for 15 years)

This connection to the fishery also links with a point raised by another member. Often, people who become involved with watershed stewardship activities have grown up being on or near the water, and this leads to a strong connection with the resource.

> "I have spent my whole life on the water and you have a hard time getting off of it" (Group 1, Male, Member for 11 years)

Along similar lines, two members spoke about their connection with the community, and the changes that they have noticed in their community as being the reason that they joined the Streamkeepers. They felt that noticing these changes and acting in order to address issues was important in making a contribution to the environment and their community.

Two members spoke about more personal reasons for joining Group 1. One of the members spoke about the role of Streamkeepers in her life as an "escape" and as a "huge balance for the rest of my life" (*Group 1, Female, Member for 9 years*). In the case of the youngest member of the Group, a high school student, he originally joined for an award as well as volunteer hours.

When asked about if their membership has changed since they first joined, members had a range of answers. Two members of Group 1 felt that their reasons had not changed since they first joined. One of these members stated that the environment is still a strong priority for him. Another member of the group felt that the environmental issues have become worse, and he wants to continue working to solve these issues.

For those members who felt that their reasons for being members had changed, one member spoke about how he enjoys the activities and feels good about giving back to the community and environment. Another member spoke about some of the relationships and friendships that she has formed as a result of her involvement with Group 1 as being factors that have kept her interested in the group.

In speaking about why he maintains his membership with Group 1 and other stewardship groups, one of the members mentioned his personal satisfaction with reaching goals.

> "When you reach one goal, you want to go further" (Group 1, Male, Member for 11 years)

Personal Expectations for Membership:

Four of the members felt that when they first joined Group 1, that they expected they would rehabilitate the creek and consequently have more fish returning to the creek. Each of these members also stated that they have not yet achieved this, but hope to in the future.

Three members also pointed out that they thought by joining the group, they would help the group through applying their technical expertise. One of these members stated that she felt that her expectations have changed, in that members of the group have become her friends, and she hopes that they will model a broader-level change in the area.

5.2.1.3 Community

Every individual who was interviewed for Group 1 felt that they have gained valuable friendships and relationships with people through their membership in the group. Most members continued to mention that they get along very well with each other. It was apparent from the conversations that these relationships extend beyond Streamkeepers.

> "We help each other. It is a really social group. We're always having dinners… everyone helps everyone else… it's a fun group" (Group 1, Male, Member for 15 years)

Many members spoke about helping each other and supporting each other outside of Streamkeeper activities. One member spoke about bringing her children out with the group, and having other group members care for her children. This exemplifies the trust and reciprocity which are present in the relationships between individuals in the group.

When members spoke about each other, they had a high-degree of familiarity about each other's personal lives. This was evident both in interviews as well as during the Saturday morning creek-work which the researcher participated in. In discussing their social interactions with each other, as well as in describing each other's roles, all members seemingly had a high level of respect for each

other and the attributes that individuals bring to the group. Further indicating strong social capital in the group, many members mentioned the open and inclusive nature of their group- which leads to members feeling accepted within the Streamkeeping setting.

> "I didn't realize all of these things outside of Streamkeeping. Being accepted and having a purpose is huge" (Group 1, Female, Member for 9 years)

The youngest member of the group expressed his fortune at being able to work with his group as a peer.

> "I have been lucky to find good people… They don't treat me as a kid or free labor" (Group 1, Male, Member for 3 years)

5.2.1.4 Benefits and Value

Towards the end of interviews, members were asked about the benefits of membership to Group 1 as well as what they value the most about their experiences. For both cases, members tended to answer with multiple reasons for each question.

In terms of benefits, both friendships and learning were mentioned by four of five interviewees each. The second most frequent answer pertained to relating to and socializing with others. Other mentioned benefits included exercise and using Streamkeepers as a stress-release.

When asked about what they value the most about their experiences with the Streamkeepers, all members of Group 1 stated that friendships and relationships were important to them. The two other most common answers (with three interviewees mentioning each) were having a sense of accomplishment/ applying

their passions and having an overall enjoyable and positive experience through their participation in Group 1. Other valued experiences included sharing their passion with others, learning, and recognition within the community.

5.2.2 Group 1: Group-Level

5.2.2.1 Learning

For group-level learning, many factors interact in order for groups to evolve and learn as a whole. Many of these aspects will be discussed in the community section. During interviews with some members of Group 1, they did touch upon some issues that concern the learning of the group as a whole. One member of the group felt that he played a role in facilitating learning for other members of the group to a higher degree than he learned from them. This individual felt that his membership in several groups and experience in the area play an important role sharing information between groups.

> "You learn bits and pieces. If you go to another group, you get things. You are a sort of messenger and you tell people about activities between groups" (Group 1, Male, Member for 11 years)

One member suggested that the learning at the group-level also relates to the need of the group to be strategic in which community-level activities they participate in, and consequently state how they will measure the success of activities. Such a comment indicates a desire to have more formal learning goals for the group.

5.2.2.2 Domain

Through the discussions with members of Group 1, the researcher noted that members of the group share a strong group identity, and also share a strong passion and vision for their work. In discussing this at the group-level, one member eloquently stated:

> "We have all carved out something from our individual lives to give back to future generations" (Group 1, Female, Member for 9 years)

Alignment of Group Goals

When members of Group 1 were asked about their formal group goals, the interviewed members shared similar ideas of the goals for the group as a whole. All members spoke about ensuring the general health of the creek and watershed for the future. One member mentioned the group's mission statement, which pertains to the protection, rehabilitation and restoration of the creek as well. Two members also mentioned that public education is a key part of their group goals.

In addressing informal group goals, members either spoke about small projects which the group is running, or they brought up the importance of respect within their group.

> "There is not any division in the group- everyone has a right to their opinions, and are able to speak" (Group 1, Male, Member for 11 years)

5.2.2.3 Community

When speaking about the structure of Group 1, one of the members spoke about the structure of the group and relationships within the group as being highly

complex and connected, much “like a spider web” (*Group 1, Male, Member for 15 years*). Communities of practice tend to be socially complex groups (Wenger et al., 2002), which is exemplified by this comment.

Within the group itself, when asked about the roles of individuals, most people spoke informally about the roles people play in the group, focusing on individual strengths, preferred activities and knowledge-areas. For example, some people have interests and strengths in advocacy, while others were identified as having an interest in monitoring or more physical work. For many people these roles are brought in from previous experiences and knowledge that was acquired from outside Streamkeeping. It is also important to note that each member discussed their own roles within the group according to their strengths as well.

In general the group does not have a formal structure, although members did point out that they do have a chair position, the person who currently fills this position was also identified as the ‘leader’ by many group members.

As this group is smaller than most others, it tends to use outside groups and contacts in obtaining information and help with accomplishing work. In doing so, members tend to use their own contacts and relationships in order to work on projects.

Generally, members of Group 1 felt that they have a good reputation in their local community. One of the members did point out that he feels that there are

some challenges and strains in their relationship with some local landowners as well as one of the cities that the group works with.

Recruiting new members and volunteers was only discussed in one interview. He stated that new members join the group mostly through friends/ person contacts or through meeting individuals during creek work. As this group is small, and has close social ties to each other, it makes recruiting a challenge.

> "Most of the people we have contacted have been friends, relatives or neighbors. We also pick up people while we are out there too. They are the most interested" (Group 1, Male, Member for 3 years)

Most of the members of Group 1 spoke about having social events outside Streamkeeping with their group members. Many of the members spoke about having weekly dinner parties together, and speaking with each other regularly throughout the week. Social events (such as Christmas parties) were also discussed during interviews.

The group leader also spoke about trying to keep meetings fun; meetings tend to take place at members' homes, rather than in more formal settings. Typically, following in-creek work on Saturday mornings, group members also go out for breakfast together, which the researcher joined in on during her field visit with Group 1.

5.2.2.4 Practice

Group 1 shares a practice which covers a wide range of activities from education programs to in-creek work. In describing the work that they do together, the members of Group 1 used similar terminology and technical terms and many

members spoke about the same projects that they work on together. When the researcher visited the group in the field, members seemed proud of the work which they conduct, and support each other in order to complete work.

Communication in Practice

Members of Group 1 mostly communicate with each other by a combination of phone, email or through discussions at activities. One member pointed out that most activities are organized by email, and if anything is unexpected, they call each other.

Communications with the public and individuals 'outside' of the group involves a combination of discussions with key contacts, media/advertising, direct communications with the public (through the 'ambush education program') and participation in events or outside activities for Group 1. One member spoke about their website, and mentioned that it needs to be updated when someone has the time to do it.

Boundary Interactions and Partnerships

During interviews with members of Group 1, people spoke about a variety of contacts and partnerships that they have in order to accomplish their work. Firstly, Group 1 works with other ENGO groups within the watershed, many of whom they work with and support. Similarly, the PSkF was mentioned by one member as an important source of technical and moral support for their work.

Due to the nature of their practice, they also work with government organizations such as local municipalities and DFO. Some members expressed frustration in trying to work with and get assistance from DFO as they are not able to adequately support the group.

> "We call fisheries to complain, but DFO won't do anything" (Group 1, Male, Member for 15 years)

In dealing with local issues, the Group must also work with local landowners, especially those who live close to the creek. When asked about using contractors for larger projects, one member mentioned having used them in the past, but they try not to do so often.

It is important to note that, as many of the individuals in this group have current employment relating to fisheries, or have in the past, many of the connections that individuals spoke about related to members' personal connections to organizations or individuals with specialized knowledge.

5.3 Group 2 Findings

For Group 2, three men and three women (n=6 interviewed, approximately 15% of group) were interviewed about their experiences as Streamkeepers. All of these members currently have, or have in the past been core or active members of the group. Two of the members interviewed are both retired and have been active in the watershed for over 15 years, both of them were members of the Vancouver Angling and Game Society, which worked on the creek starting in 1987. The other members of the group have been active in the area since they commenced their Streamkeeper activities.

As Group 2 was founded in 1998, three individuals have been members of the group for nine years. Two other members have been active members for seven years, and the youngest interviewed member (a high school student) has been involved for three years. All of the interviewed members have at sometime been members of at least two other volunteer groups, one member has been involved with five. When speaking about his experience as a volunteer in other groups, one member stated:

> "I've always been involved in something and wondered why I had so many things to do" (Group 2, Male, Member for 9 years)

5.3.1 Group 2: Individual Streamkeepers

5.3.1.1 Learning

All members of Group 2 stated that they learn through their Streamkeeper activities. One member initially hesitated in answering this question, but followed up his answer with a number of areas in which he learns.

As with Group 1, members of Group 2 spoke about a number of topics of learning. Many of these topics related to Streamkeeper activities such as creek morphology, habitat, fish and using equipment. A few people spoke about topics of learning which came from other members' expertise and interests such as the history of the City of Burnaby. Learning about social topics, such as other members of the group was also mentioned by some members. One member also spoke about learning about other cultures from members in his group when he was addressing the topic of learning.

> "We have two Japanese ladies, they are both very active in the group" (Group 2, Male, Member for 9 years)

The youngest member of the group mentioned that she enjoys her interactions with the adults, and learning from them about career choices.

> "I like to be with the adults and to learn about careers that are out there; learn to interact with people of older ages" (Group 2, Female, Member for 3 years)

In addressing how and where learning takes place, interviewees touched upon a number of learning forums. Many of the interviewed members of the group spoke about 'hands-on' activities such as stream monitoring and invertebrate counting as being sources of learning for them. Another stated that producing the group's annual report was a way by which he learns. This highlights the experiential aspects of Streamkeepers' learning.

> "Just experiencing, seeing, learning and doing" (Group 2, Female, Member for 7 years)

One member pointed out that when he first began activities with his group he learned in-creek, now that he has been involved for a longer period of time, he learns more through different activities.

> "At the initial stage I learned in-creek. Now it is repetitive. New members have a steep learning curve" (Group 2, Male, Member for 7 years)

A few members discussed learning through observations, but most members spoke about learning with a social basis. Members mentioned places and ways by which they learn such as sharing information through discussions with other members, visits from outside experts (from other organizations or government) during meetings, events or creek-visits, and training through the PSkF.

During the discussions on learning, a few members mentioned how they learned through these activities. One gentleman spoke about asking questions whenever

an expert is around. Another member stated that she learns through arguments and debates over topics and potential projects with other group members.

5.3.1.2 Domain

Identity

During interviews, all members of Group 2 expressed that they felt that they are 'Streamkeepers' and that other people view them as a Streamkeeper. In defining who a Streamkeeper is, members had a range of answers, but most of the interviewees touched upon the need for Streamkeepers to be concerned about watershed health. Many individuals also touched upon the idea that a Streamkeeper can be involved in a number of different ways, and does not necessarily need to be in a group. This highlights the inclusive nature of the concept. Some members also touched upon the need for Streamkeepers to be 'active' as well as 'committed' to protecting the watershed.

> "Streamkeepers really stick with it. I am one" (Group 2, Female, Member for 9 years)

Motivations and Evolving Reasons for Membership

In addressing the question regarding why they first joined their group, members of Group 2 had a wide range of answers. Most of the reasons that the researcher was given link back to altruistic motivations such as educating the public (or family) on environmental issues, community improvement, and "giving back" to the resource. Two of the interviewees stated that they had joined for more social reasons, as their friends or neighbors had invited them to join the group.

One individual expressed how she came to join the group in very clear terms, which gives a lot of insight into her story, and provides an idea of one way by which an individual may become inspired to join a Streamkeepers group.

> "I always knew the creek. I grew up here. I had heard about the Streamkeepers, but didn't consider joining it. The watershed is a bit of a ghetto… there was a building that was torn down, they left the rubble and a chain link fence. It felt like people were saying our neighborhood is crap. My daughter and I thought that we should put something there. We knew that the City was slow to act. The idea of looking at that mess for 10 years was horrible. My daughter and I thought about putting a mural up or something to make it look better. In my sister's neighborhood an artist had taken plywood, had people paint their favorite thing about the neighborhood on it and put it on the fence there. My daughter and I thought about how we could do this in our neighborhood… What is great about our neighborhood is the creek; beautiful, quiet, and serene compared with the rest of the neighborhood. Few people knew about it. It also had fish in it…
> I didn't know much about fish, I spoke to [the chair for Group 2] and she told me to present it to the Streamkeeping group. I am not your typical Streamkeeper. I wear nail polish. I like fashion. I came in there and said let's put fish on the corner of Kingsway. [She] saw the value in it- to get into the creek and schools" (Group 2, Female, Member for 7 years)

After being members of Group 2 for a while, most members felt that their reasons for being a part of the group have changed since they first joined. In the case of the member who stated that her reason hasn't changed since she joined, she emphasized the importance of expanding their audience for environmental education.

For those members who feel that their reasons have changed, two members spoke about their increased knowledge about and passion for watershed. Two of the older members of the group spoke about how they enjoy participating in the group. One of these gentlemen expanded on his comment to say that he likes the people and being outdoors. The youngest member of the group also stated

that she enjoys the time she spends with the adults, and has recently been using her time with the Streamkeepers for volunteer hours for scholarships.

Personal Expectations for Membership[1]

Of the members who were asked about their expectations for their membership in the group. The most common answers were to be involved in public education and to rehabilitate the creek. Others also mentioned specific projects and community improvement in their expectations. The youngest member of the group stated that she thought there would be more young people involved in the group.

In speaking about their current expectations for the group, all members stated that they would like to continue with the work that they have been doing for the future. A few people also talked about developing a way to connect further with the community in the future.

5.3.1.3 Community

When discussing the individual relationships within the group, it was evident that social aspects of participating in Group 2 were important to many members. Most members in the group spoke about the people that they have met and friendships that have made through their participation in the group. Members of the group spoke about some socially-based activities such as barbeques or dinners, but most of the members expressed that they socialize mostly through

[1] Please note that this question was only directly asked of three interviewees from this group, as it was added to the interview schedule after the first three interviews

planned group activities and more social group activities such as impromptu invasive plant removals.

Several people mentioned that they have gained close friends through their membership in the group. When speaking about each other, many members spoke very highly of their fellow group members.

> "Through the Streamkeepers, I have met and am relating to the cream of the crop" (Group 2, Female, Member for 7 years)

In attending the group's Christmas meeting, the researcher noted that members treated each other well, and seemed to feel comfortable enough with each other to make jokes and speak openly about their ideas.

5.3.1.4 Benefits and Value

Several patterns emerged from the discussion on the benefits of membership with Group 2. Firstly, all six interviewees stated that learning about the watershed and the environment were benefits of their membership in the group. Being involved in the community and helping others were also mentioned by half of the interviewees.

Some members also felt that friendships and relating to others were important benefits from their membership. Another personal benefit of membership in Streamkeepers was noted by the two older gentlemen who were involved in interviews. They both felt that being active and having exercise were key benefits to their membership.

> "When you're walking around the creeks, you're exercising. Better than sitting on the couch… I'm 78 years old and this has kept me alive better than drinking whiskey" (Group 2, Male, Member for 9 years)

When asked what they value the most about their experiences with their group, four of the six interviewed members of Group 2 stated that friendships or 'the people' were the most valued aspect of their participation. Many of these individuals went on to state that they have enjoyed their participation in the group, and have had a positive experience.

Others mentioned that their involvement gives them a sense of personal satisfaction or accomplishment as well as a way to apply their passion through their work with Group 2. In doing so, several members also mentioned that they value the connection to the community and environment as well as the ability to remain active through their work with Streamkeepers. A few members stated that learning and having the opportunity to improve their careers are also valued aspects of their involvement in Streamkeepers.

5.3.2 Group 2: Group-Level

5.3.2.1 Learning

Group-level learning will mostly be discussed in the following sections. One factor that was raised by a few members during their interviews is the process of learning the group has undergone as a result of some issues or specific projects. As the result of one project which was introduced by an individual, the group itself evolved to become involved in more creative activities and different community events from what they had previously been involved in. As a result of this project and spin-off activities, the group has played a role in introducing ideas and teaching certain activities to other groups outside of their own.

Some members also mentioned the importance of producing the annual report in learning and guiding the group's goals and activities.

5.3.2.2 Domain

Through discussions with members, it is evident that there are shared values within the group. Some of these values are tied to more specific activities, for example watershed monitoring versus public education, but overall, members have the ability to work together on projects and have an overlap in their interests in most areas.

Alignment of Group Goals

Although many members stated that they have no formal goals, when asked about what the formal goals of their group are, most members of Group 2 shared the same three core ideas. Five of the six interviewees mentioned ideas relating to the sustainability and general health of the watershed as a formal goal. Four also mentioned that education and community involvement are also aspects of their formal goals. Several members also spoke about monitoring the creek as a formal goal of the group.

In addressing the idea of informal goals in the group, very little pattern emerged with only a few people giving the same answers. Fun and creativity were mentioned by several interviewees as informal goals, and other mentioned respecting each-other, specific projects, individual roles and the feeling of having made a contribution as informal goals.

5.3.2.3 Community

Several of the members of Group 2 described their group as a 'tribe' which people are able to belong to, highlighting the inclusive nature of the group. There were also numerous members who spoke about the importance of keeping activities fun and creative to encourage people to be a part of the group.

> "Lots of fun. Creativity keeps it alive in a different way" (Group 2, Female, Member for 9 years)

In discussing the roles of individuals in their group, most individuals spoke about the various areas which people contribute to and are interested in. People identified roles primarily according to involvement in activities such as invertebrate surveys, or interest-areas such as broader public-awareness or creative projects. Many members pointed out the large number of professionals and individuals in the group, and the contribution those aspects make to the group.

> "It is a high-level group- an ecology teacher, engineers and geologists; all of these people can lend professional expertise as well. It helps us get stuff through the city departments by having strong credentials" (Group 2, Female, Member for 9 years)

Although the roles within the group are fairly informal, several people mentioned the importance of their group leader and her energy in coordinating the group. Several other members were identified for their key roles in communications and report development. During an interview, one of the members mentioned the importance of various levels of participation and different roles in the group. He highlighted the idea that some people are involved, but do not necessarily participate as others do.

> "Some people are participants that don't participate"

> "We need bookkeepers and librarians. You don't need to do manual labour to be a Streamkeeper. Some people can't do the manual part. If they are good at writing letters, a secretary. Some people are moral support. They bring tea or muffins" (Group 2, Male, Member for 9 years)

All members of the group whom I spoke with felt that they have a good reputation in their community and with organizations that they work with. Some people used awards as an example of these strong external relationships.

> "We get a fair amount of publicity in the papers. When something happens we get publicity. We often get awards from Burnaby" (Group 2, Male, Member for 9 years)

The issue of recruitment was not raised in interviews, but the fact that the group has changed over time was spoken about by several members in the group. One member spoke about the importance of cultivating new members and the resulting changes from the ideas that people bring to the group.

> "Each new member is a gem, and we try to cultivate them. As a result of new members, we spin off in different issues" (Group 2, Male, Member for 7 years)

Similar views were expressed by others in the group as well. Two members of the group spoke about the group changing and having new directions as a result of their membership. For one member, she brought in new, creative ideas and projects that impacted the path of the group greatly (this was raised by nearly all interviewed members of the group as well). For the youngest interviewed member of Group 2, she felt that she has been able to connect the group more to the high school in the area, and has provided a connection between the two.

As already mentioned, Group 2 does have some social events, although they are typically linked with 'fun' or 'casual' activities such as lantern

festivals or invasive plant removals. Some members also mentioned group summer barbeques as well. For the most part, meetings are held at a local school. The researcher joined the meeting, which had a formal structure (in the form of an agenda) and was chaired by the group leader, but was conducted in an informal fashion, with open discussions.

5.3.2.4 Practice

Group 2 engages in a wide variety of activities together. Although some activities are more specialized, and only certain people participate in them, some events attract more/most active participants in the group, which aids the group in having a sense of shared practice and accomplishments. In particular, one project was discussed by almost all participants in having made an impact on the group. Several group members spoke about this particular work as having "brought the group together".

The group is also using tools such as their annual report and indicators in order to guide group activities and plan for the future. One member spoke about the success of the group, and that it is impacting both their group and others.

> "We're starting to get the message across, which is getting other people excited" (Group 2, Female, Member for 9 years)

<u>Communication in Practice</u>

Most of the internal communications for Group 2 are done by email and through the group listserve. Several members do not have access to computers, so contact with them is maintained by phone. Most of the members stated that monthly meetings are also an important means of communicating with group

members. A couple of interviewees stated that they also learn about activities through their group website.

Members of Group 2 spoke about many different ways of communicating with outside contacts and the public. The majority of members spoke about using key contacts in order to accomplish their work and communicate with outside groups (an example of this would be speaking with a specific engineer with the city department to discuss their work). Many members mentioned the importance of media in promoting their group, this also goes along with community events.

> "I introduced them to the lantern festival. It is a wonderful way of being in the public eye" (Group 2, Female, Member for 7 years)

A number of individuals also mentioned the importance of casual conversations with people in communicating with the public and individuals outside of the group. Finally, two members also mentioned the importance of the group website in providing information on Group 2 to outsiders.

> “The website communicates and showcases the group for outside” (Group 2, Male, Member for 7 years)

Boundary Interactions and Partnerships

As mentioned earlier, the interviewed members of Group 2 expressed that they have a good reputation in their community. In discussing their partnerships, members spoke about the importance of collaborating with their partners and “voicing concerns politely” with the City of Burnaby.

In discussing who they work with, almost all members of Group 2 spoke about working closely with (several departments within) the City of Burnaby. Some members also spoke about other community groups in the area such as scouts

and cubs, other Streamkeepers groups and local schools. Only a few members spoke about using contractors or hiring consultants to complete work, as there are many professionals in the group already.

Several members also discussed their contact with their DFO CA when they do salmon releases or major work.

5.4 Group 3 Findings

Six individuals were interviewed from Group 3, five men and one woman (n=6 interviewed members, approximately 12% of the group). Through discussions with members of the group it was revealed that members have been active in the watershed area for between five and 30 years. Three of the members have been working on watershed-related issues area for over 15 years. Three of the interviewed members have been working with Group 3 since it was formed in 1998, two members for five years, and one for six years.

All of the interviewed members from Group 3 have been involved in at least one other volunteer group in the past. Four of the members have been involved in more than one group, with one member having volunteered in over five groups over time.

5.4.1 Group 3: Individual Streamkeepers

5.4.1.1 Learning

All of the members of Group 3 felt that they learn through their experiences through Streamkeepers. In one discussion, one of the interviewees

enthusiastically stated that he learns something every time he enters the watershed. One member hesitated slightly in answering the question and then stated that she does learn, but perhaps not necessarily what she intended to.

> "I think that I do [learn], sometimes I don't agree with what I am learning about at the time" (Group 3, Female, Member for 6 years)

Members of the group cited several topics which they learn about through their Streamkeeper activities. Many people discussed their learning about fish, the creek and watershed through their experiences in activities. Several members of the group also stated that they learned about running programs and projects. A couple of people stated that they learned about group dynamics through their experiences. One member felt that there was some learning which he couldn't pinpoint through his involvement in the group.

> "On a personal level, learning is more than fish-handling. I can't put my finger on it exactly" (Group 3, Male, Member for 5 years)

Many of the members of Group 3 who were interviewed have professional backgrounds in areas related to Streamkeepers. A few of these interviewees spoke about the role of Streamkeeper activities in reinforcing knowledge from their previous training and experience.

Interviewees spoke about a number of ways in which they learn. In conversations, several people mentioned making observations about the watershed and their learning through that. One member stated that when he sees something new, he looks it up on the internet or at the library to learn more. Numerous members spoke about the social nature of their learning. As each person has a key area of expertise, they are able to learn from each other's knowledge areas and teach each other.

> "The hatchery manager is an amazing guy. What you learn from him from a practical and behavioral point of view is huge" (Group 3, Male, Member for 9 years)

One of the members spoke about the perpetual nature of his learning through Streamkeeper activities, as one problem is identified, it opens up learning in many other areas.

> "The more you learn, the more you need to learn" (Group 3, Male, Member for 9 years)

5.4.1.2 Domain

Identity

All of the interviewed members from Group 3 consider themselves to be Streamkeepers, and felt that other people would consider them to be Streamkeepers as well. Several people pointed out that they have nicknames related to their involvement with the group. In one discussion in particular a member expressed a strong passion for his involvement in the group and the identity that he has developed as a result of his membership and connection to the area.

> "The fact that I am [Bob] from [Group 3], and nobody can take that away from me" (Group 3, Male, Member for 9 years)

When asked to define who a Streamkeeper is, many of the members stated that it is a "broad concept", which is difficult to define. Most of the members expressed that it is someone who has a concern for the watershed and issues connected to it.

> "We're all keepers of the stream whether it is good or bad. Generally if you care about fish, you care about everything. It is all interconnected" (Group 3, Female, Member for 6 years)

In some interviews, people mentioned passion as an important element of the Streamkeeper identity. A number of individuals also included a range of involvement, with a few also implying that a Streamkeeper must be active in protecting the watershed.

Motivations and Evolving Reasons for Membership

Most of the members of Group 3 expressed that they had originally become in the group due to altruistic reasons such as a strong passion for Streamkeeping-related issues, a feeling that the work is important and because of their connection to the area.

> "I joined [the group] because I am interested in fish habitat. I was passionate about it even though I couldn't make money at it" (Group 3, Female, Member for 6 years)

Sharing their passion with other "like-minded people", and some social-aspects of the group were mentioned in several interviews as reasons that people joined the group as well. Some individuals originally joined the group for professional or work-related reasons that also linked to their interests.

In discussing how their reasons for membership have changed since first joining the group, most of the members spoke about their increased level of involvement in the group since they originally joined, whether it is through increased responsibility by being on the board, or through making a living from stewardship-related activities.

> "You have to question yourself after so many years in stewardship. I keep doing it because it is important" (Group 3, Male, Member for 9 years)

One member mentioned that his reason for staying involved is that he enjoys "the connection with the people" (*Group 3, Male, Member for 5 years*).

Personal Expectations for Membership

In addressing initial expectations for joining their group, members of Group 3 had a variety of ideas for what they felt would happen. Three members expected to be involved in and develop education programs for the group. Others mentioned being involved by helping the group through applying their knowledge, having employment opportunities, and being connected with the community. One member also thought that he would be more involved in the work than he is presently, and have more activity around him from the group.

In addressing their hopes and expectations for the future of the group, there was very little variation in the answers from individuals. Five of six individuals spoke about the stewardship centre that they are hoping to build for education programs. The same number also stated that they would like to continue with the work they are currently conducting in the future. One member stated that he would like to connect more with the community in the future, while another mentioned the importance of being able to deal with issues as they arise in the future.

5.4.1.3 Community

Although most members of Group 3 felt that they are too busy to engage in many purely 'social' activities with their group members, there were many indications that members have strong relationships with each other. Several

members of the group mentioned the importance of the friendships that have developed as a result of their participation in the group.

> "None of the people in the group would have been considered friends before, the relationships have all developed since I've been apart of the group" (Group 3, Male, Member for 9 years)

When asked to describe the social aspects of the group, several members spoke about the role of the group in supporting one individual when his marriage broke-up. This also ties into the importance of the group in developing trust and support mechanisms for each other. Members also expressed that they have respect for each other as people and others' skill areas and capabilities. One individual spoke about the importance of the connections in the group, and the reciprocation of efforts.

> "Spokes in the wheel- people playing off each other: energy, ability, passion to get these things happening" (Group 3, Male, Member for 9 years)

5.4.1.4 Benefits and Value

The most frequently mentioned benefit to their membership in Group 3 was learning. Following this, many group members felt that their involvement in the community was another important benefit of participation in Streamkeepers. Several members also mentioned that they have benefited professionally from their membership in the group, and also included the ability to apply their knowledge as an advantage of membership. A few individuals spoke about friendships and socializing as benefits of their participation in Group 3.

In speaking about what they value most about their association with Group 3, most of the members felt that sharing passion with other members was valuable

to them. Similarly, four members also spoke about the friendships that have formed through their membership in the group. Being connected to the community and having a sense of accomplishment were also highly valued by many members of the group. Several individuals mentioned other valued aspects of membership including: learning, an overall positive experience through the group, and having a sense of place.

5.4.2 Group 3: Group-Level

5.4.2.1 Learning

Some members spoke directly about the social aspects of learning at the group-level, and the dynamics which cause the group to change.

> "People playing off of each other- energy, ability, passion to get these things happening… this desire, ability wants to come forward, and you have something new for the group" (*Group 3, Male, Member for 9 years*)

In interviews with group members, the issue of the group as an entity learning and facilitating learning with other groups was raised by three of the interviewees. One of the members spoke about the importance of strategic planning in directing the group.

> [Strategic Planning] "brings us back to our main objectives- it is good to reflect back on what we learned and what we didn't" (Group 3, Female, Member for 6 years)

In discussing the partnership between Group 3 and a local woodlot, one of the members spoke about the benefit of learning "going both ways" between the two groups (*Group 3, Male, Member for 6 years*). Another interviewee stated, however, that there is not enough transfer of

information between groups, and also a need to branch out to other people to learn more as a group.

> "We don't do enough idea-swapping sessions with other groups, sometimes we are too inward looking and it is difficult to look outside" (Group 3, Male, Member for 9 years)

5.4.2.2 Domain

In the section on shared vision, it was evident that members of Group 3 share common passions and visions for their watershed. In speaking with members about their formal group goals, the interviewees were highly aligned, with almost all individuals directing the researcher to the group's mission statement. The individual who did not speak about the mission statement explicitly, mentioned all of the key areas listed in the mission statement.

When asked about the informal goals of the organization, people mentioned three main areas: projects which certain people undertake, certain things that are done but aren't mandated and respecting other members of the group. As one member stated, Group 3 does have some more formalized aspects, such as the strategic plan which mandates how the group operates.

> "Because we do strategic planning, everything is pretty well written down" (Group 3, Female, Member for 6 years)

5.4.2.3 Community

One member of Group 3 described his group as "spokes on a wheel", with each individual bringing certain aspects to the group in order for it to function as a whole.

> "Individuals make up the spokes on the wheel. Brining together those people with their skills, passions and responsibilities. The power of one" (Group 3, Male, Member for 9 years)

In discussing the roles and responsibilities of the group, people spoke about each other's interest areas and professional backgrounds. In speaking about their own roles, interviewees typically spoke about their experiences outside of Streamkeepers ("different hats" they wear) and ways in which they brought their other experiences into their practice in Group 3. Most respondents felt that roles within the group are flexible and informal, as many of the members are capable of substituting for each other- highlighting the high-level of capacity of the group.

> "We're strong because we can fill in for each other" (Group 3, Female, Member for 6 years)

In describing how the group functions, one member described the structure as having various levels of participation.

> "The group is like an electron with a nucleus. There are seven or eight core people, about ten that come out to other events. Others will come sometimes" (*Group 3, Male, Member for 5 years*)

In several interviews, group members brought up the concept of openness and inclusiveness in the group. Several members spoke about the role of being able to express opinions openly with other members as an important attribute of their group dynamics. One member stated that they had waived their membership fee in order to encourage new members to join. Recruitment, however, was discussed by several members of the group as an issue that needs to be addressed for Group 3.

> "Recruitment is a big [goal]- our board is stretched really thin. It is a big project. Our membership is strong on paper, but we haven't seen many people in a long time" (Group 3 , Male, Member for 9 years)

Although recruitment is a concern, there have been some new members who have entered the group and made an impact on the path of the group. A couple of members also spoke about this topic.

> "The group changes. It depends on the members at the time. Longer term and shorter term members will change the dynamics" (*Group 3, Male, Member for 5 years*)

When asked about the social aspects of their group, members had a range of answers. Some members felt that the group does have formal and informal social events, whereas others expressed that they need more social aspects.

> "We haven't done much plain fun activities. We haven't got around to doing it yet" (*Group 3, Male, Member for 5 years*)

5.4.2.4 Practice

Group 3 is active in many areas, as they are involved in the management of a hatchery and running programs throughout their local community. In describing their practice, many members emphasized the importance of their connections to outside groups and learning from those experiences in order to achieve their goals. Many members also had a strong sense of pride and passion in their work, which seemingly tied the group together.

<u>Communication in Practice</u>

In discussions with members of Group 3, email and meetings were cited as the most used means of communicating internally, although several members also mentioned using the phone to communicate within the group as well. A few

members also stated that communication occurs through the use of their website and casual discussions.

Communicating with people who are outside the group involves a variety of approaches. The majority of group members mentioned speaking with key contacts with the GVRD and the municipality in communicating what activities they are undertaking. Using media and advertising as well as public events were also spoken about by many members in the group as well. Several members felt that their website plays a key role in communicating group activities with outside groups, and one member discussed the importance of community-based listserves to communicate with other ENGOs in the area.

Boundary Interactions and Partnerships

Due to the context in which Group 3 operates, partnerships are a key part of how the group operates. Most of the members spoke about the group's close relationship with the GVRD (as the operate in a regional park). As this is a unique situation, one member mentioned that aspects of the relationship can pose some challenges for the group.

> "The GVRD partnership makes our group a little different than others. The bureaucracy can be different" (Group 3, Female, Member for 6 years)

Most members, however, mentioned the importance of the GVRD in supporting the work that they do and providing resources. As the group has a contract to operate the hatchery, they also have to work with DFO for certain projects (especially relating to the fish fence and releases). Several members expressed frustration with Fisheries, as it is difficult to complete work and they are not as

familiar with the local conditions of the area as some of the members of the group.

The group also works with a variety of local institutions and groups in completing their work.

> "Partnerships are an important part of what [the group] has done: other community organizations, City (planning and engineering)…woodlots, Scouts and Rovers" (Group 3, Male, Member for 9 years)

One member also spoke about forming a coalition in the past when issues needed to be dealt with in the watershed. Several group members also spoke about the importance of working with outside groups on particular problems that arise in the watershed, rather than taking more aggressive approaches which result in 'head-butting'.

5.5 Chapter Summary

This chapter on the findings of the study gave an overview of the results from the interviews with Streamkeepers as well as observations from field visits. Indicators for the various aspects of communities of practice as well as key attributes of stewardship organizations derived from the literature were reviewed for Groups 1, 2, and 3. In all cases, aspects of each of the community of practice attributes were found. Chapter Six presents a summary of the findings, a cross-case analysis and discussion to place these results in the context of the literature.

Chapter Six: Analysis and Discussion

The purpose of this chapter is to provide a cross-case analysis of the findings presented in the previous chapter in relation to the conceptual framework, and to place these findings in the broader context of the literature. The cross-case analysis investigates the major trends noted during the study- examining the main similarities and differences between the individuals in the groups as well as those noted between the groups themselves. The discussion portion of the chapter addresses research Objectives 2 and 3; investigating the contributions that communities of practice make to stewardship organizations and presenting a process model for stewardship groups.

6.1 Cross-Case Analysis

As can be noted in the previous chapter, the data collected from the three study groups suggests strong evidence of communities of practice in Streamkeepers groups. A summary of the findings comparing the three different case study groups at both the individual Streamkeeper and group-level can be seen in Table 6.1. Using Table 6.1 to guide the discussion, this cross-case analysis will build upon the findings presented in the previous chapter and will discuss major themes in the data in order to verify the research questions.

Table 6.1- Summary of findings according to key communities of practice factors

	Group 1		Group 2		Group 3	
	Individual	**Group**	**Individual**	**Group**	**Individual**	**Group**
Learning	-About: watershed, skills/tools, people, politics, tacit -How: observation, co-members -Where: activities, casual discussions, events, PSkF	-Boundary interactions -Need to be more strategic	-About: watershed, skills/tools, people (their experiences and culture) -How: hands-on work, observation, co-members, asking questions, debates -Where: in-creek activities, discussions, meetings, report production	-New members and project ideas -Annual report production -Teaching other groups	-About: watershed, skills/tools, reinforce personal knowledge, people (group dynamics), tacit -How: observation, internet/library searches, co-members, challenges/ issues with programs -Where: activities, discussions, meetings	-Strategic planning to direct group -2-way learning process with other groups
Domain	-Strong identity -Mostly altruistic motivations to join -Reasons for membership evolved: personal satisfaction, friendship, and community contribution	-Strong collective identity -Well-aligned group goals (even though informal) -Some variation in informal goal answers	-Strong identity -Mostly altruistic motivations to join -Reasons for membership evolved: more passion/ knowledge, enjoyment, friendship	-Strong collective identity -Well-aligned group goals (even though informal) -Range of informal goal answers	-Strong identity -Mostly altruistic motivations to join -Reasons for membership evolved: connection and shared passion with others, increased involvement	-Strong collective identity -Highly aligned group goals (mission statement) -Somewhat aligned informal goals
Community	-Very close personal relationships between many group members	-Range of informal roles; 1 chair/leader -Good reputation in community -Limited recruitment -Many social events	-Close relationships between some members	-Range of informal roles; 1 chair/leader and 2 communica-tions -Good reputation in community -Some recruitment -Occasional social events	-Close relationships between some members	-Roles are flexible but formal; 1 chair and 1 part-time coordinator; -Good reputation in community -Recruitment is a concern -Not many social events
Practice (see table 4.1 for activity list)	-Communication: Internal by email and phone; External by key contacts, media, direct outreach, events -Boundaries: range of organizations and groups, mostly ENGOs		-Communication: Internal by email (listserve) and phone, website and meetings; External by key contacts, media, events, conversations with the public -Boundaries: range of organizations and groups, mostly the City and local organizations		-Communication: Internal by email and meetings, phone and website; External by key contacts, media, website, listserves -Boundaries: broad range of organizations and groups, mostly GVRD, DFO, City and partner groups	

6.1.1 Cross-Case Analysis: Individual Streamkeepers

This section provides an overview of some of the basic information collected on the interviewees from the study. 70 percent of the individuals interviewed were male, and 30 percent of the interviewed Streamkeepers were female.

The majority of volunteers with whom the researcher spoke with are considered 'active' in their groups. Over half of the interviewed individuals have been involved in two to three volunteer groups, 20 percent in four to five groups, and 15 percent have been involved in over five groups in the past. This indicates a strong connection with volunteerism in these groups, and is consistent with data collected by Donald (1997), who found that active environmental group participants are more likely than 'non-active' participants to be involved in multiple volunteer groups and activities.

Throughout the study, trends indicated that the majority of Streamkeepers volunteers have been active in their watershed/community for long periods of time. The average time that the interviewed Streamkeepers have participated in voluntary actions in their watershed is fourteen years, while the average length of membership in their groups was eight years. This suggests that the majority of interviewed individuals are committed to long-term volunteerism in their watershed and community, and have extended that commitment to their Streamkeepers groups. This long-term commitment to working in the same place can help facilitate the building of local knowledge, and developing a 'sense of place' for volunteers (Gooch, 2002).

6.1.1.1 Learning

As can be noted in Table 6.1, there was very little difference in the results regarding individual learning between each group. In all three groups, every interviewed member stated that they learn through Streamkeepers-related activities. In discussing topics of learning, the most frequently mentioned topic-area was learning about the watershed, ecosystems, or fish. Several members of Groups 2 and 3 mentioned that they learned about restoring natural ecosystems, which speaks to the fact that these groups participate in more restoration activities than Group 1. These answers highlight the context-specific nature of learning that occurs in situated learning (Brown and Duguid, 1991).

Many members of all three groups also spoke about learning about social dynamics and other people through their Streamkeepers experiences (Table 6.1). Both of the high school students pointed out that they have learned more about how to relate to adults. Learning about and from other's expertise and experience was also cited as a way by which individuals learn in a social context through their practice. This exemplifies the social basis of learning outlined in situated learning theory, which is core to the communities of practice concept (Lave and Wenger 1991; Wenger, 2000).

Some members pointed out that they learned about politics and bureaucracies through the work that they take on with their groups. There was a noted level of frustration with some of the individuals when they spoke about what they were learning at the time. Although argument and frustration have been cited by Wenger et al. (2002) as one way by which group members learn, it was also

noted by Donald (1997) that political issues can lead to a decline in volunteer participation and motivation.

Tacit learning was also noted during conversations with members of Groups 1 and 3 (Table 6.1). The individuals who spoke about it had stated that they were unsure what they learn through Streamkeeper activities, but they feel that they do learn. The tacit learning and knowledge that is acquired in communities of practice is highly important for managers to recognize, as it is considered an essential component of the learning theory (Brown and Duguid, 1991; Saint-Onge and Wallace, 2003). For some members, they felt that their learning reinforces the knowledge-base that they already have, which emphasizes the role of repetition and experience in learning.

During the interviews Streamkeepers discussed the various ways in which they learn (Table 6.1). Most of the members in each group stated that they learn by making observations on the creek and during activities. Lave and Wenger (1991) spoke about observations and informal learning as being key methods by which people learn throughout their participation in communities of practice, but this is especially applied to peripheral participants in groups.

Members in each group also spoke about socially-based learning from others in their group as a means by which they learn. Some of these socially-based ways that were discussed included asking questions, arguing with other members about ideas, learning from others' expertise and interest areas. Asking questions and discussing with others in a group are key factors of the learning process

identified by Saint-Onge and Wallace (2003), and are applied in the conceptual framework for this study. At least one member of each group also commented on the constant nature of learning as a result of their membership in Streamkeepers- some people recognized that the nature of their learning changes over time. This 'continual' nature of learning is noted by Saint-Onge and Wallace (2003), as the learning process results from the application of information in various contexts, each time yielding new knowledge and results, which drives the learning process to continue through asking questions that require new information.

A few interviewees spoke about the importance of 'hands on' learning in Streamkeeping- exemplifying the significance of experiential learning. This category includes the Streamkeepers training, which was mentioned in several interviews. Members of Group 2 discussed the importance of compiling their annual report as a forum for learning more about their group's activities and successes- showing again that communicating experiences and information within the group provides a valuable learning environment for members.

6.1.1.2 Domain

Identity

In all groups, every interviewed individual stated that they identified themselves as a Streamkeepers, and that others (who were aware of the concept) would identify them as one as well (Table 6.1). Similarly, the definition of a Streamkeeper had comparable patterns in the answers that were given in each group. A 'Streamkeeper' was identified as a broad concept by many people, and

typically featured ideas such as an individual with a concern for the watershed or environment. In each group people pointed out that there are different levels of involvement, highlighting the inclusive nature of Streamkeepers. Members of each group also pointed out that a Streamkeeper is typically 'active' in the watershed, while a few interviewed individuals stated that a Streamkeeper is committed or passionate about their work. These results have several implications. Firstly, they indicate that there is a strongly shared identity for individuals participating in Streamkeepers. This shared identity is an important aspect of communities of practice (Wenger et al., 2002). The results also indicate these individuals have an 'ecological identity', an important factor driving many volunteers in environmental activities- which leads to collectively shared values, beliefs and interests among individuals (Gooch, 2002).

Motivations and Evolving Reasons for Membership

The original motivations for joining Streamkeepers can broadly be divided into altruistic and personal reasons. As can be noted in Table 6.1, there is little difference between the answers of individuals in the different groups, pointing to strong trends of motivations for individuals joining Streamkeepers.

The majority of interviewees spoke about altruistic motivators for joining Streamkeepers. Most of the individuals stated their reasons for joining included a need to 'give something back' (especially the case with the fishers spoken with in Groups 1 and 2), and having an environmental conscious. Others spoke about a connection to the local area and to water- several people also mentioned having life-long ties to the environment. Many individuals spoke explicitly about their

passion for issues as being a motivator to join the Streamkeepers. Along similar lines, some people discussed the importance of sharing their passion with others as a motivator of their membership in Streamkeepers. Another factor, mentioned by some individuals in Group 2 was educating the public about environmental issues as a reason for joining their groups. These responses are consistent with previous studies on volunteer motivations, as in those cases as well, the majority of individuals stated altruistic reasons for joining voluntary stewardship groups (Donald, 1997; Ryan et al., 2001; Randle and Dolnicar, 2006). In linking these motivations back to Maslow's (1943) work on human motivations and the hierarchy of human needs, such altruistic motivators link to 'high' needs found in the self-actualization category. This category includes problem solving, creativity and morality (Maslow, 1943).

So-called 'individualistic' reasons for joining Streamkeepers were not as commonly mentioned in interviews. The most common personal motivation for joining Streamkeepers groups was to socialize with others. Socializing has also been noted as a motivator in some other studies such as Ryan et al. (2001) and Donald (1997). This was especially noted in interviews with members of Groups 2 and 3. In Maslow's hierarchy, friendship and the respect of/by others links back to mid- to upper needs in the theory of human motivation, linking specifically to love/belonging and esteem, respectively (Maslow, 1943).

The two youngest interviewed members also spoke about getting volunteer hour credits for other programs as motivators for their involvement in their groups. A few others spoke about potential professional development and skills application

as key factors motivating them to join Streamkeepers in the beginning. The literature has pointed to learning and gaining professional skills as a common personal reason for joining environmental stewardship programs (Ryan et al, 2001; Donald, 1997). A select number of interviewees in the various groups also mentioned using Streamkeepers as an 'escape' from other aspects of their lives, and a way of achieving balance in their lifestyles- emphasizing the psychological health benefits of participating in environmental stewardship. Maslow (1943) would indicate that such a need for security and health links Streamkeeping activities to one of the more basic needs in the hierarchy, 'safety'. The role that Streamkeepers plays in connecting with natural areas shows the value that reflection in nature plays for individuals (Ryan et al. (2001); and the importance of having a sense of place for watershed volunteers (Gooch, 2002).

It should be noted that the process by which individuals join a group was highlighted by the story of one member from Group 2. Although this speaks to only one specific case, it brings to light an important part of how motivated individuals become actively engaged in stewardship work when they do not have pre-existing social connections to a group. This example will be further demonstrated in the process model presented at the end of the chapter.

Although Streamkeepers remained with their groups, 88 percent of the total respondents felt that their reasons for being a part of the group changed with time, while only a few interviewees felt that their reasons for being in the group hadn't changed. Wenger et al. (2002) identified that stronger relationships and shared passion develop as a result of individuals participating in a community-

thus, this is an indication of communities of practice. The majority of respondents had some degree of hesitation in answering how their reasons for being in the group had changed. Some of those who felt their reasons for membership had changed, were unsure of how they had; signifying some of the tacit aspects discussed in the communities of practice literature which can be noted through interviews with Streamkeepers (Wenger, 1998).

Members of Groups 1,2 and 3 felt that they enjoy being apart of their group, and have remained as participants because of that. Donald (1997) also noted 'enjoyment' as a reason for volunteers to continue participating in stewardship activities. This is also significant due to the voluntary participation warranted by communities of practice (Wenger et al., 2002). Similarly, a strongly shared passion for the work that they are committed to was noted by several members of all groups as the reason that they continue to participate in Streamkeepers, this was typically mentioned in conjunction with the amount of knowledge they had gained as a result of their membership. Along with the literature on communities of practice, Gooch (2002) found that having a strong identity and passion are key for fostering long-term watershed volunteers. Many Streamkeepers feel that their reason for participating changed due to the increased importance of friendships and relationships with other people in their group- members of Groups 1 were particularly adamant about this point. The building of friendships (and social capital) has been found to be an important contributor to long-term commitment to stewardship groups (Ryan et al., 2001; Gooch, 2002). The implied emphasis on friendships for members of Group 1 is likely linked to the small size of the group, and the greater intimacy of their

relationships, which has been noted in studies on communities of practice (Wenger et al., 2002).

Several participants of Group 3 felt that an adjustment in their role within their group and/or a shift in their level of involvement in the group had changed their reasons for being in the group. These responses could be linked to a realization of shared passion for their work, and a desire to make a significant contribution. As these individuals are all active on the board, they are more active than most other members of their group.

A couple of participants also felt that their participation in Streamkeepers has become important for their emotional well-being; providing a stress-release and a place to escape personal problems. Likewise, Streamkeepers provides a means for members to stay physically active. This was especially recognized by the older members who were interviewed for the research. The younger members who were interviewed both mentioned that they have enjoyed interacting with the adults, and that has helped sustain their membership with Streamkeepers. These answers point to the importance of the perceived socio-psychological and physical health benefits for members of Streamkeepers.

This analysis and discussion of motivations and evolving reasons for membership in Streamkeepers groups indicates that individual members of groups have values and ideas that are closely aligned and connected to their fellow participants, which strengthens the domain of each group (Wenger et al., 2002). Having knowledge of these motivating factors and evolving reasons for

membership gives potential managers and stewardship coordinators the opportunity to focus on recruiting and maintaining these individuals.

Personal Expectations for Membership

In addressing their personal expectations for membership in Streamkeepers groups, there were some notable differences in what members spoke about. These differences mostly reflected the different interests of individuals as well as the key activities undertaken by each group.

For Group 1, most of the members felt that they would rehabilitate the creek and a few members felt that they would be able to apply their knowledge with the group. For Group 2, many members mentioned rehabilitating the creek as a personal expectation, and several interviewees mentioned educating the public. An interesting note is that the youngest member of Group 2 pointed out that she expected more young people to be involved in her group upon joining. Donald (1997) noted that teenagers are more likely to participate in activities if other teens are involved with the group. Overall, these groups show strong alignment of initial goals for members.

There were a variety of answers for members of Group 3, ranging from educating the public and connecting with the community, gaining employment, to having increased social activity. Although there was some overlap, this is different from those expectations of the other groups. As initial motivations for members in joining the group were fairly closely connected to each other, this

may be related to personal preferences in the work, and the types of opportunities available to members when they initially joined the group.

While there were a range of answers for their initial personal expectations, looking into the future, the individuals and groups were much more united in their expectations. Namely, almost all members spoke about the need to continue with the work that they are doing. Some members of Groups 2 and 3 felt that they want to connect more with the community, while a few members of Group 3 discussed a specific project and having more flexibility to deal with future issues in the watershed. This shows that the group and its members have evolved over time to share a vision for both their group activities and watershed. The evolved shared vision indicates bonding social capital (OECD, 2001) and a strong domain shared amongst individuals (Wenger et al., 2002).

6.1.1.3 Community

Elements of community were identified in the individual relationships that were discussed with members of each group. Almost all interviewees spoke about the value of the friendships that they have gained through the Streamkeepers (Table 6.1). Through these discussions, it became evident that members of Group 1 have the strongest personal relationships with their fellow group members, exemplified by their discussions of supporting each other outside of group activities, trusting each other with family and personal issues, respecting each other, accepting others, and having very frequent social activities. As Group 1 is smaller than the other groups, and is less formalized in structure, this high

degree of familiarity, reciprocity, trust and other indicators of social capital were expected (Wenger et al., 2002).

Group 2 members also showed somewhat similar depth in their relationships with each other, but the relationships were not discussed to the same extent and with the same level of familiarity with each other as in Group 1. Group 3 members also have strong relationships with each other, and support each other outside of group activities, but members seem to interact in a more formalized setting than the other groups, and have little time to interact outside of Streamkeeper-related activities.

An important observation from the interviews was that the high school students (Groups 1 and 2) stated they felt as though they are treated as peers by the adults in their groups. The above-discussed relationships and bonds between individuals in the groups are a sign of strong bonding social capital within each group (OECD, 2001).

6.1.1.4 Benefits and Value

Discussion of the benefits and values of membership with Streamkeepers was notably similar between groups, with strong patterns emerging from their answers. When asked about the benefits of membership, 88 percent of interviewees stated that learning was a major benefit from their participation in Streamkeepers. Donald (1997) found that learning was a commonly answered reason for individuals remaining as volunteers in environmental stewardship groups. The second most common answer among groups was that friendships

are a benefit of their membership. Work by both Ryan et al. (2001), Donald (1997), and Gooch (2002) found friendships play a key role in maintaining stewardship volunteers. As previously discussed, this was especially true of Group 1, and was less noted for Group 3. Relating to others and applying knowledge were other commonly–found answers between groups. Many members of Group 3 also felt that community involvement was a benefit of their membership in Streamkeepers groups. Again, making a contribution to communities and having a sense of place are commonly found reasons that people both become and remain volunteers (Donald, 1997; Ryan et al., 2001; Gooch, 2002).

In speaking about what is valued regarding their membership in their groups, over 75 percent of interviewees stated that they value the relationships and people that they have met through their participation in Streamkeepers. In addressing major indicators of communities of practice, Wenger (1998) found that when individuals were asked what they value about participating in their communities, they would simply answer 'the people'. This happened in many of the interviews with Streamkeepers, illustrating the significance of the social aspects of practice for individuals.

The second most common valued aspect of participation for each group was a sense of accomplishment from their activities. Donald (1997) also found this as an important factor for volunteers remaining active in the *Bringing Back the Don Task Force*. In Group 3, almost all members stated that they value the shared passion they have with their fellow group members and board. This shared

passion is a sign of social capital in the group, and is a key factor to maintain committed volunteers and successful initiatives (Gooch, 2002). Members of Groups 2 and 3 also pointed out they value the connection that they have with the community and watershed through their work. Having a sense of place and learning were also common answers in each group- as already mentioned, these factors are consistent with the literature.

6.1.2 Cross-Case Analysis: Group-Level

6.1.2.1 Learning

As was noted during each of the sections pertaining specifically to individual groups, collective learning was a topic that was addressed directly in only some discussions. This section presents a summary of the discussions that occurred with individuals of groups (and summarized in Table 6.1), but should be taken more as a series of points specifically on collective learning as opposed to an area that is comparable between groups.

For Group 1, one member pointed that he plays an important role in facilitating learning for members of his group, by interacting with other groups and bringing back that knowledge to his group members. This indicates boundary interaction, in the form of brokering as discussed by Wenger (1998). These boundary interactions can be an important source of innovation and learning for communities of practice (Wenger, 1998)

Group 2 members spoke about the group evolving and learning as a result of specific activities and new individuals. Wenger et al. (2002) mention recruitment

and new individuals as important ways in which groups change and open to new ideas and learning opportunities. A few members also felt that they contribute to the community by teaching other groups and individuals outside of their group. As with Group 2, Group 3 interviewees noted that the group changes with the addition of new members and changes in the social dynamics of the group. Members of this group also spoke about partnerships as being an important way by which the group changes and learns; again placing emphasis on obtaining new members and boundary activities as key ways to help groups evolve and learn (Wenger et al., 1998).

With Group 3, one of the collective learning processes that was mentioned by nearly all members was their strategic planning sessions, which helps the group focus their work. A similar process, producing the annual report for Group 2, was mentioned by some members of that group. One member of Group 1 had stated that she wanted the group to be more strategic in their work- the use of strategic planning to focus the learning trajectory for groups is a potential way by which groups can guide their goals and objectives.

Finally, one member of Group 3 expressed that he felt the group needs to share more information with outside groups in order to learn more about how they can improve their collective practice. Such a statement should be taken into consideration by group leaders, as there is a need to increase bridging activities groups in order to facilitate this information exchange and to harness learning opportunities.

6.1.2.2 Domain

Alignment of Group Goals

When group members were asked to state their group's formal goals, the responses in each group were consistently similar, pointing towards a powerful shared vision within the groups (Table 6.1). This shared vision of group goals affirms the purpose and value of group membership, and also guides the learning trajectories of both individuals and the group as a whole (Wenger et al., 2002).

For Group 3, over two-thirds of members told the researcher to review their mission statement, with the other members touching on the key elements of it. For the other two groups, almost every member felt that their group was working towards ensuring the health and long-term sustainability of the creek and/or watershed. Other common themes mentioned by group members included environmental education and watershed monitoring. This slight division in responses reflects the degree of formality between the groups, as Group 3, being larger than the others, is more structured and therefore formalized than the other groups.

With respect to informal goals, responses of group members varied more than most other responses within and between groups, with most interviewees hesitating in their answers. This may be the way how the question was worded, or can be linked to the fact that articulating implicit aspects of practice can be complicated (Wenger, 1998), especially without the opportunity to sufficiently reflect upon the idea. Never-the-less, some patterns did emerge among

individuals in the various groups. Many people referred to certain projects, and respecting their co-members in their practice. In Group 2 and 3, members also mentioned certain roles that individuals play in their group, and in Group 2, some members spoke about having fun as an informal goal.

6.1.2.3 Community

Community can be defined as a "group of people who interact, learn together, build relationships and in the process develop a sense of belonging and mutual commitment" (Wenger et al., 2002). In each group, at least one person tried to describe the social structure of their group and the inter-reliance on each other and other groups. These analogies ranged from being a 'spider-web' to 'spokes on a wheel' to being a 'tribe'- each of them implying the complexity that arises as a result of social networks in a community of practice (e.g. Wenger et al., 2002). A summary of group-level community findings can be seen in Table 6.1.

When asked about the roles that people play in each group, individuals were referred to mostly according to their interests, professional backgrounds or the activities that they are involved in. Maintaining this variety of roles is key to a uphold interest and learning in communities of practice (Wenger et al., 2002). For Group 3, the interviewed members were all a part of the board. They spoke about the formal nature of their group on paper, but the ability of members to interchange and fill-in for each other as needed.

In Groups 1 and 2, members spoke about the informal structure of their groups, but many proceeded to discuss the importance of their group 'leaders' in helping

the group maintain momentum and organizing activities. For Group 3, the coordinator role was mentioned by many interviewees as playing a key role in organizing activities and supporting members. Many people spoke about the various levels of participation that people have in their groups. The importance of leadership and adaptability through various levels of participation are key concepts contributing to the success of both communities of practice (Wenger et al., 2002) and stewardship organizations (Hall, 2000).

As shown in Table 6.1, almost every member who was interviewed felt that their groups have a good reputation in their communities and among other organizations. Establishing a good rapport is imperative for stewardship groups. The only group where a few people felt like there may be some issues with their reputation was Group 1. This group appeared to have a somewhat strained relationship with one of the cities in their watershed, and one member stated that some homeowners in the area may be annoyed by their activities. Each group (especially noted in Groups 2 and 3) have made a concerted effort to build positive relationships and partnerships with local governments and organizations. The OECD (2001) pointed out that fostering trust between groups and institutions is important for achieving success in initiatives. Thus, maintaining a good reputation and having strong external relationships is important for Streamkeepers groups and communities of practice.

Recruitment is considered a key factor for maintaining innovation and interest in communities of practice (Wenger et al., 2002). Much of the literature on volunteer groups also points to recruitment as an area of concern to ensure the

survival of groups. For each group, the issue of recruitment was discussed briefly in some interviews. One member of Group 1 stated that they typically recruit new members through friends, personal contacts and when they are out working in the watershed. In Group 2, one interviewee also spoke about personal contact as being a way to recruit new volunteers, and another person pointed out that with new members, the group changes and heads in new directions, which is encouraged by the group. With Group 3, the fact that new members impact the dynamics of the group was discussed, with one member pointing out that higher recruitment is needed for the group, and part of their strategic plan for this year.

Obtaining new volunteers is an important area of focus for each of the groups, and should be encouraged. Each of the groups showed strong signs of bonding social capital- this was especially noted for Groups 1 and 3, as Group 1 has very close relationships, and Group 3 members stated they tend to be too inward looking. A common concern with groups with strong bonding social capital is that they can be insular, and due to their high degree of familiarity with each other, they may alienate potential newcomers to the group (OECD, 2001). Concerted efforts should be made in order to encourage bridging social capital between different groups and individuals to ensure recruitment and information sharing.

Holding, as well as participating, in events where members can interact with each other in an informal setting can help strengthen the social fabric of communities of practice (Wenger et al., 2001). This is important to cultivate familiarity and trust in relationships, which is the foundation for information flow and learning in communities of practice (Wenger, 1998). As mentioned in the

section on individuals and community, the number of social events for each group varies (Table 6.1). Group 1, the smallest group, has frequent social events (such as Friday dinners), and they try to attach social aspects to each of their activities such as ‘fun’ meetings and breakfasts after doing creek work. Group 2 emphasizes creativity and fun aspects to their work, but have fewer purely social events and are slightly more formal in how they conduct their meetings. Members of Group 3, the largest group, stated that they have some ‘social’ events, but several members pointed out that they do not have enough activities that are just ‘plain fun’.

6.1.2.4 Practice

Practice refers to joint activity and the creation of knowledge products in communities of practice (Wenger et al., 2002). In speaking about their connection with their group’s practice, members of each group spoke about their activities using common terminology and aligned ideas of their goals and visions. Although each group undertakes a variety of activities, Group 2 seemingly had a greater diversity of work that they participate in, while Group 3 is more focused in their practice- towards education programs, and Group 1 has more resource constraints (mostly by the number of people) than the other groups to conduct a wide range of specialized activities. As mentioned in the section on community, roles within the group are typically spoken about with relation to which activities members are involved in. Within their specific interest areas, group members are able to focus their learning, however it seems that the group as a whole sees the ‘bigger picture’ of their practice together, which is inferred by their strongly aligned expectations and goals within each group.

Communication in Practice

As with any group, communication is imperative to communities of practice (Wenger et al., 2002). Communications help keep the values of the group explicit for members, and can ensure quick information sharing (Wenger et al., 2002). Table 6.1 shows the main means of communication which Streamkeepers of all groups identified during interviews- again, there are strong similarities in how the three groups communicate. Over 90 percent of interviewees said that internal communication, especially organizing events, takes place by email. This was followed by group meetings and telephone as key means by which the group corresponds and shares information. Casual discussions were also stated as a means of communicating about group activities. In Groups 2 and 3, both of which have active websites, several participants stated that they use that to communicate with their group internally. Using websites and 1-on-1 networking are important ways of keeping peripheral participants informed on group activities and news (Wenger et al., 2002). The researcher noted that listserves also play a key role in communicating information and events with all members.

The methods of communication Streamkeepers use with outside contacts are generally different from what they use internally. The main means of communicating with outside groups is through the use of key contacts in addressing issues and sharing information.

In dealing with external communications, most of the interviewees in each group spoke about using key contacts either with local municipalities, PSkF or other

groups in order to get the word out. The use of the public events and media to communicate group activities and goals to outside sources was also cited by over half of interviewees. Both of these methods are used to gain public attention and attract a broader audience to learn about the Streamkeepers. Websites are also used by the groups to grab the attention of the public, and to promote the work of Streamkeepers groups. Again, this is an excellent means of keeping outsiders and peripheral participants informed of group work (Wenger et al., 2002).

While these formal methods of communicating are usually mentioned first by most interviewees, several people in Groups 1 and 2 pointed out the importance of communicating the importance of the work through speaking with people and demonstrating Streamkeeping “on the creek”. These informal conversations and meetings are considered to be vital vehicles for learning and information sharing in communities of practice (Wenger, 1998). Through such activities, Streamkeepers are able to engage local individuals in their direct environment, which provides the opportunity to access individuals who would otherwise not be attending events such as environmental fairs. In fact, as one interviewee from Group 1 pointed out, communications with the broader public through attendance at environmental fairs is limited, due to the fact that groups feel they are ‘preaching to the converted’. Thus, utilizing the creative approaches and innovation are imperative to communicating with the broader public.

A Streamkeepers Network: Boundary Interactions and Partnerships

Utilizing outside contacts and groups in order to accomplish work and learn is imperative to the practice of Streamkeepers groups, which was recognized within

many interviews (Table 6.1). These boundary interactions are opportunities for groups to learn, and are useful for solving complex problems that arise within groups (Wenger, 1998). The nature of these relationships can be formalized, such as the need to obtain approval for in-stream work from DFO, or highly informal such as (the already mentioned) members who have multi-group membership and share their experiences between different groups.

For all groups, hiring private consulting firms or contractors in their practice is minimal. They tend to avoid direct use of them, except for major habitat enhancement projects. All of the groups have members with at least some professional background or links that can help them complete their work without hiring consultants or contractors. Each group at least partially focuses their work on education. As such, schools and groups such as Scouts and Guides were typically cited as key to conducting their work. This shows the types of projects that the groups tend to participate in.

In each of the participating groups, working with their local municipal engineers, council and planners was identified as an important part of their practice. For Group 2, all members identified this relationship as being especially strong, with the group collaborating with the City for much of their work. This indicates institutional social capital, which plays an important role in the success of collaborative efforts between organizations (OECD, 2001).

Group 3 has a burgeoning relationship with the municipality in their watershed, with key contacts within the City playing a key role for them to accomplish work.

In particular, the environmental assessment officer from the City was identified as an important contact in order to accomplish work. Their strongest partnership lies with the GVRD, as the creek and their facilities are located within a GVRD Park. All members spoke of the GVRD partnership as an advantage to the group. Group 3 also has multiple-partnerships with organizations in their watershed. Of these, the relationship with a woodlot operated by BCIT was identified as a key element in their practice, with the connection between the Institute and the group's Board of Directors being a key element in the success of the partnership.

Fairly formal interactions seem to dominate the explicitly stated activities of the two aforementioned groups. Group 1, however, has a different means of accomplishing work. In this context, the creek runs through two cities, both of which they must communicate with when they are dealing with creek-related issues. Seemingly due to the complexity associated with the situation and the limited resources available to their group, Group 1 focuses more upon interactions with other Streamkeepers and the PSkF in order to learn and accomplish tasks.

As mentioned earlier, DFO approval is required for in-stream projects and some other aspects of the practice that the groups carry out. Although people spoke very highly of their DFO CA, many members expressed a high degree of frustration with the bureaucratic aspects of DFO and the lack of response on certain issues. This lack of institutional trust has an impact on the successes of collaborative projects and efforts requiring cooperation between groups (OECD,

2001). This problem with DFO has been noted in many publications relating to stewardship groups on the west coast, such as Paish (1999).

Overall, all three groups exhibit ties to other groups and agencies which leads to partnerships and collaboration on projects. This bridging social capital plays an important role in maintaining successful initiatives (OECD, 2001). As such, groups need to concentrate on ensuring open communications outside of their groups to maintain innovation in their practice (Wenger et al., 2002).

6.1.3 Cross-Case Analysis Summary

This analysis demonstrates that all of the noted aspects of communities of practice are active within each of the Streamkeepers groups participating in this study. This fulfills Objective 1 of the research. For most aspects (with the exception of 'informal group goals'), there was very little variation in answers between individuals within each group. At a broader level, there are many trends found between groups in the study as well.

The main areas of difference are likely linked to group size and structure, as the smallest group had notably closer relationships and a less formal structure than does the larger groups, with the largest group being the most focused on practical aspects of their work.

6.2 Review of the Conceptual Framework in the Context of the Findings

The literature suggests that there are several key factors that contribute to communities of practice and successful stewardship organizations. This literature

was discussed in detail in Chapter Two, and the conceptual framework (Figure 2.4) was developed based upon that literature. Figure 6.1 is a simplified version of the conceptual framework presented in Chapter Two.

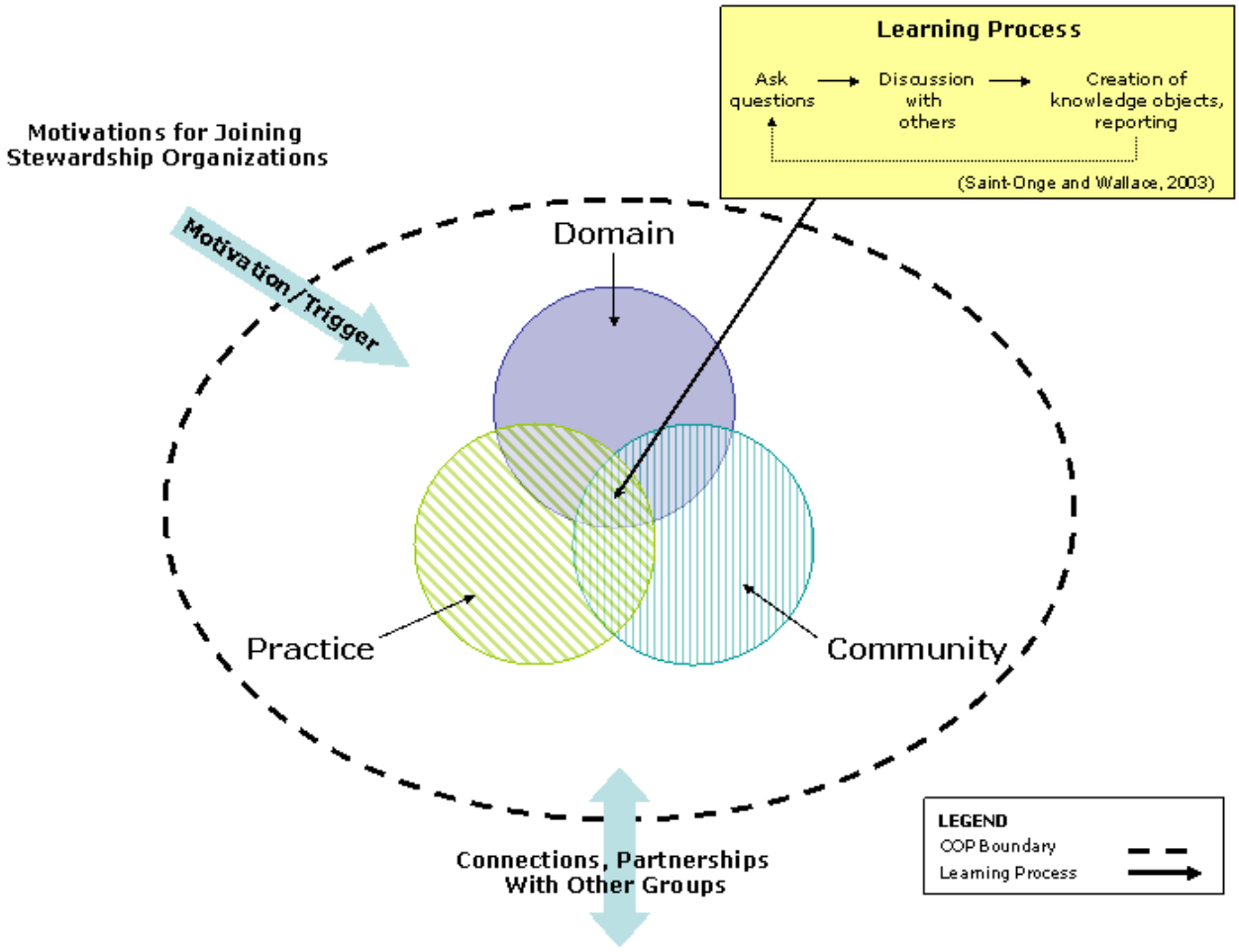

Figure 6.1- Simplified version of the conceptual framework from Chapter Two

Throughout the findings and cross-case analysis sections in this thesis, the results were guided by the basic elements presented in Figure 6.1. During the research process, it became evident that these elements all play an important role in Streamkeepers groups, and all closely interact and inter-relate with each other in order for these groups to accomplish their goals.

As learning is central to this study, it was focused on for the analysis and in the presentation of results. The cyclical learning process presented in Figure 6.1 was discussed in many interviews- with Streamkeepers mentioning a variety of experiences that can trigger learning. This included socially-based interactions, passive observations and 'hands on' experiences. The described learning process occurs at different rates and at different scales, but inevitably, social processes are a part of the vast majority of learning (both informal and formal) that takes place within these groups.

It was noted that the motivations for joining a stewardship group are closely linked with the domain of the group, and these aspects interact and evolve closely together in order for members of a group to maintain their interest and membership. The results of this work also point towards the key role of relationships (both personal and professional) in stewardship groups and communities of practice. Thus, the community element of the framework plays an important role in learning and carrying-out work. The practice element also has a vital function in successful stewardship groups. Not only does 'practice' pertain to running programs, developing artifacts and accomplishing group goals; but it also connects to the key role of communications and external relationships for a community of practice. This practice element is also an important part of keeping volunteers active in the group (linking to the domain), and developing the networks necessary to sustain the group's existence.

Through the interaction of all of these elements, groups continually learn, adapt and innovate through the exchange of information both within their groups, and

with outside contacts who are not considered direct members of their group. Therefore, through the information presented, Figure 6.1 presents a useful representation of communities of practice in environmental stewardship groups.

The following sections will speak directly to research Objectives 2 and 3, and provide potential ideas for broader implications for this study.

6.3 Communities of Practice and Contributions to Successful Stewardship Initiatives

In this thesis, three groups have been studied who have been active in their watershed for long periods of time. They have sustained their activity through major shifts in funding availability, political trends and environmental paradigms, indicating that they have attributes of successful stewardship groups. This ability to evolve and remain active and effective within their watersheds has been a major factor contributing to each group's successes. The communities of practice literature points out that the ability to evolve, adapt and innovate are vital to the long-term sustainability of a community of practice (Wenger et al., 2002).

As has been demonstrated throughout the findings and analysis chapters, communities of practice are a key contributing factor to the processes by which these groups operate. In each group, members have strongly aligned values and share similar visions for their group direction. This, combined with a shared passion for their work is a key driving force for their work- indicating that having a strong commitment to the group's domain is imperative for a community's success in stewardship (Wenger et al., 2002).

The ability to develop this domain is facilitated through the building of trust, belonging and reciprocity that is core to a community (Wenger et al., 2002). Through building these relationships, communities develop their communal identity and have a stronger likelihood of maintaining long-term volunteers (Wenger et al., 2002; Gooch, 2002). Relationships and friendships were themes that emerged continually throughout the research.

Each group also had a range of activities they undertake, and have a diversity of roles and levels of participation for individuals in group activities. This is important to cater to the needs of stewardship volunteers and to foster learning for individuals with different interests in a community of practice. Successful groups also require coordination and leadership in order to help maintain group communications and direction (Hall, 2000; Wenger et al., 2002)- the importance of respected leadership in group activities was discussed by members of each Streamkeepers group. From the findings in this study, leaders tended to emerge from activities, and would eventually 'end up' in leadership positions, especially in smaller groups. As groups get larger, designating a group leader takes on a more formalized process.

Bonding social capital within a group appears to be a major contributor to the success and long-term retention of Streamkeepers volunteers. It should be noted, however, that in some cases that there is a need for more boundary interaction, partnerships and communications with other groups and individuals

in order to obtain new volunteers and learning opportunities for group (Wenger, 1998; Hall, 2000).

Maintaining these external relationships and having a positive reputation in the community has helped these groups sustain their practice. Having a variety of means for participants to communicate, network and learn is another important factor that was noted with each group in the study. By including all members on listserves, phone lists and regularly updating websites, peripheral participants (and 'outsiders') are able to keep abreast of group activities (Wenger et al., 2002). Holding regular activities and events where members can have casual discussions and learn from others was noted as being especially important for learning in groups, and is consistent with the literature as well (Wenger et al., 2002).

Similarly, by having members from a range of backgrounds as members in the groups, they are able to maintain their capacity through a broader network of expertise and resources (Fitch, 2000). This open and inclusive approach to membership is a key consideration for communities of practice to attract member participation under a common goal or interest-area (Wenger et al., 2002).

For each group, members conveyed a strong sense of connection to local-area conditions and circumstances, which produces knowledge and learning situated in their specific contexts (Gooch, 2002; Brown and Duguid, 1991). Actively cultivating this local knowledge-base provides watershed planners and managers

with an opportunity to have more efficient watershed initiatives. For group members to track their learning experiences and to set their learning trajectories, the use of annual reports or strategic planning have proven useful for two of the three studied stewardship groups.

6.4 Process Model for Stewardship Groups

Based upon the research findings and the conceptual framework, a generalized process model demonstrating how individuals come to join Streamkeepers groups, and how the groups operate is presented in Figure 6.2. This model gives a general sense of the process of what motivates groups, how groups grow and communicate and ultimately how decisions are made and work is accomplished.

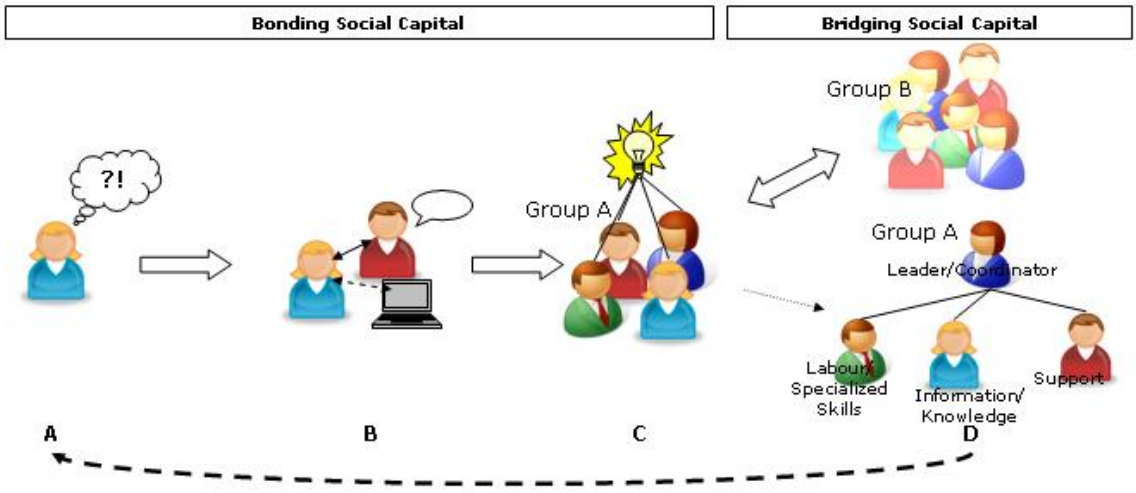

Figure 6.2- Process model for Streamkeepers groups

The initial stage of the process (marked 'A' in Figure 6.2) involves an individual recognizing an issue and subsequently developing an interest in it. In general, the concern developed by an individual takes place through an informal learning process such as making an observation about a problem in the watershed. From

the findings presented for this research, the interest that an individual develops in an issue may be founded on altruistic or more 'personal' reasons; these reasons then motivate an individual to act upon the issue. In their work on communities of practice, Saint-Onge and Wallace (2003) identify this initial stage as the question development stage. During this time individuals and groups have questions that need to be answered, and thus they require expertise to find out more about an issue.

Part B of the process is the initial stage of gathering information, and the preliminary step of social learning. The majority of individuals interviewed for this study spoke about obtaining information and communicating through 1-on-1 interactions with others, some also mentioned using the internet or libraries to learn more about topics and issues.

Wenger et al. (2002) have identified this as the 'potential' stage for communities of practice, where individuals must tap into networks that already have knowledge on- or interest in- the topic and define their domain. During this time, individuals begin to learn from the experiences and expertise of others involved in their informal social network. Those involved in dialogue on the topic share an interest in the subject, and thus the domain of the group begins to be developed. As this tends to be the first step of social interaction, this also requires that relationships (and thus elements of social capital) are formed in order to facilitate the flow of information (Wenger et al., 2002).

Following the initial gathering of information, individuals will seek more formal and broader information sources within their group (if already existing) and contacts, thus building their organization (part 'C' in Figure 6.2). With an increasing number of interested participants and activity, the domain begins to become more formalized (Wenger et al., 2002). This was noted in this research, as the groups got progressively larger, they had more formal organization. With group growth and more regular interactions, the community's social fabric becomes more well-established and complex; resulting in strong bonding social capital between group members (OECD, 2001). A key issue at this stage is to encourage knowledge sharing about the core topic areas/ domain (Wenger et al., 2002). From these interactions, the group develops its collective knowledge base in-context, and gains direction for their work and required learning (Wenger et al., 2002).

The final step, Part 'D' in Figure 6.2, noted in the diagram is cooperation and action. Here, groups begin to fill knowledge and resource gaps through contacting other individuals, groups and institutions in order to enhance their practice. Wenger (1998) refers to this as boundary interaction, and in the literature on social capital, this indicates bridging social capital (OECD, 2001). As the group expands to employ new networks, individual roles within the group tend to become more specialized as they become associated with their area of interest or expertise. Each Streamkeepers group showed evidence of this as individuals were identified according to their interests, expertise and participation in certain activities. It is important to note that especially at this stage, there is a range of participation levels in activities, where some individuals

are core to activities and others learn about the group through peripheral participation.

It is through the opportunity to put their ideas into action where collective (and individual) learning through practice is more noticeable. This stage tends to promote the most innovation as members begin to identify gaps in knowledge (Wenger et al., 2002). Following the development of more knowledge through their situated experiences, group members will likely have more problems and questions that they need to solve- thus exemplifying the cyclical nature of learning (Saint-Onge and Wallace, 2003).

6.5 Chapter Summary

This chapter provided a cross-case analysis of the study findings, and went on to place these findings in the context of the literature on successful stewardship groups and communities of practice. The final section of the chapter synthesized this information to produce a process model for communities of practice in stewardship organizations. In doing so, this chapter answers objectives 1, 2, and 3 of the research objectives. The following conclusion chapter will deal with implications of these findings for individuals, groups and professionals working with stewardship groups.

Chapter Seven: Conclusions and Recommendations

7.1 Introduction

This study focuses on the role of communities of practice in Streamkeepers organizations. Specifically, the goal of the research was to determine how communities of practice theory applies to stewardship organizations and their activities. The goal was achieved by applying a qualitative approach to the research question. By using semi-structured interviews and participant observation techniques, insight was gained into the how communities of practice fit into stewardship group processes. These methods were applied to three Streamkeepers groups (one small, medium and large). In total 17 telephone interviews took place, and each group was visited once to conduct observations of member interactions during group activities.

This chapter provides a review of the findings and conclusions in relation to study Objectives 1 through 3 as presented in Chapter One. The first section of the chapter is followed by recommendations and implications for individuals, groups, and outside agencies and professionals working with Streamkeepers groups, and stewardship organizations in general; this section fulfills Objective 4 for the study. Future directions for research in this topic area are provided at the end of the chapter.

7.2 Conclusions According to Study Objectives 1 to 3

7.2.1 Objective 1

The first objective of the study was to identify the elements of communities of practice which are found in stewardship groups. In the literature review of this thesis, communities of practice were described, and the literature on communities of practice and stewardship were merged to develop the conceptual framework used to guide the presentation of findings and analysis for the research. The main aspects of communities of practice that were focused on throughout the study were: learning, domain, community and practice (communication and boundary interactions). These areas were identified by Wenger et al. (2002) as being the core elements of a community of practice.

The study results indicate a strong correlation between communities of practice and Streamkeepers organizations. Individual- and group-level indicators were examined for the elements of communities of practice in each group. In all instances, indicators were found for each core area, and results within each group were extremely similar, resulting in a convergence of evidence. Some slight differences were seen amongst groups, likely the result of different contexts/circumstances and related to the size of each group.

Furthermore, the literature review indicated that there is significant overlap between the elements of communities of practice and areas of key importance to environmental stewardship organizations. Through the application and subsequent discussion of the conceptual framework presented in Chapter Two (Figure 2.4), it can be concluded that the framework presents a strong

foundation to describe communities of practice in stewardship organizations. Therefore, the evidence provided in this thesis demonstrates that the studied areas of communities of practice (learning, domain, community and practice) are found both in Streamkeepers groups and proof from other studies suggests that they are found in other stewardship organizations as well.

7.2.2 Objective 2

Objective 2 of this thesis was to determine how these elements contribute to the success of stewardship organizations and projects. The review of the literature, as well as the analysis and discussion of data presented here, shows that communities of practice and traits found in successful stewardship organizations are highly related. In Chapter Six, an in-depth discussion of these elements is found in section 6.2.

To summarize the points raised in section 6.2, communities of practice and successful stewardship organizations (such as those studied here) are able to adapt to changing circumstances, and provide an atmosphere that encourages innovation in the activities and programs that are run by groups. Through sustaining their practice over the long-term, groups develop a strong knowledge-base specific to their local area and watershed; this plays an important role in facilitating proper watershed management in the area.

The studied groups all had strongly aligned visions, values and passion that drives their groups (domain). This serves as the foundation for group activities. In each group, aspects of community also make an important contribution to

their work- with strong bonding social capital within groups, and evidence of bridging social capital connecting them to outsiders.

All of the groups also operate in such a way that there are a diversity of roles and levels of participation within each organization, but each group has a leader who facilitates communication amongst group members and with outsiders. This is also an important factor identified in the communities of practice literature (Wenger et al, 2002).

As already inferred, each group has a range of activities in their practice, which provides individuals who have different areas of interest and expertise, with the opportunity to participate in and learn about various activities. Through offering such a range, groups are able to have access to a broader audience and sustain their practice through attracting individuals with a range of expertise (Wenger et al., 2002).

Therefore, based on the analysis and discussion presented in this thesis, communities of practice have the potential to make a large contribution to the success of stewardship organizations.

7.2.3 Objective 3

Section 6.3 examines Objective 3 of the study- to develop a model to describe communities of practice in stewardship organizations. This model (Figure 6.2) describes the process of learning and organizational development for

stewardship organizations based upon the findings of this study and the literature.

The procedure begins with an individual showing an interest in an issue, and subsequently questioning aspects of the issue. Following this trigger and question-development, the individual seeks information- typically through discussions with another person or through searching available information sources. This begins the social learning process that is core to communities of practice (Brown and Duguid, 1991).

As the individual(s) require more information, they begin to expand their group to include others who have greater expertise in the topic area, and thus expand their group size and build relationships with others. During this time, the focal issue (domain) becomes more formalized, and networks are developed (Wenger et al., 2002).

In the final stage presented in the model, the group sets into action and begins to interact with other groups as they strive to address the issue and get more information from outside sources. At this stage, boundary interactions occur (to a greater degree than in the other stages) and thus bridging social capital occurs in order to develop the outside relationships and expand their practice (OECD, 2001). Within the group itself, individuals have more defined roles and the organization becomes more formalized. This stage is considered to be where the most creative and innovate practices occur (Wenger et al., 2002).

While engaging in this process of social learning, more questions and issues are raised by individuals, and the process of asking questions and seeking information commence again (Saint-Onge and Wallace, 2003). This process model, demonstrating the adaptive nature of learning, fulfills Objective 3 of the research.

7.3 Recommendations and Implications

Objective 4 of the research is to evaluate how stewardship organizations can encourage and enhance communities of practice within their structure. This section does this by looking at the various 'layers' involved in stewardship organizations: the individual steward, the group itself and outside agencies and professionals working with stewardship organizations.

7.3.1 The Steward

Individuals involved in stewardship typically cite altruistic reasons for joining groups, while some people express that they join groups for reasons of self-benefit (e.g. Donald, 1997). The findings of this study reinforce this, and build upon previous studies by noting that as stewards participate in their groups, the reasons for participating change as a result of their learning and interactions with others within the group. Identifying the needs of group members and providing them with the opportunity to evolve as their interests change is important in order to retain individuals in a community of practice (Wenger et al., 2002).

Recommendation #1: Individuals in stewardship groups should be provided with the opportunity to reflect upon their experiences, and develop personal learning trajectories and goals. This will help them adapt their practice to fulfill personal and group needs.

- By holding informal personal reviews with trusted members of their group, the individual steward can revisit personal goals and interests within the group structure. Following such a review, measures should be taken to enable individuals to fulfill their goals and interests through group participation.

7.3.2 The Stewardship Group

Each group has a wide range of activities that they undertake in order to fulfill group goals and the needs of individuals. For Groups 2 and 3, measures have been taken in order to track their learning on an annual basis and to set goals for the future- for Group 2, they prepare an annual report and for Group 3, strategic planning. For both groups, these exercises serve as extremely valuable learning experiences and have helped them direct their practice.

Recommendation #2: Groups should engage in activities to track their learning and practice. This will help them focus their work, learn from previous experiences and take new approaches to issues.

- To achieve this, strategic planning exercises and the production of annual reports with collective contributions are recommended.
- Strategic planning sessions should be held on an annual basis in order to review and adapt to any changes which may impact their organization.

This investigation found that as groups get larger in size, the interactions and forums for learning that drive their work become more formalized. Similar findings were noted by Wenger et al. (2002). The research presented here suggests that a large proportion of learning tends to take place in less-formal settings, through 1-on-1 interactions and informal conversations with others and observations; these findings are consistent with the literature on communities of practice (e.g. Wenger, 1998).

Recommendation #3: Group coordinators and leaders should ensure that there are sufficient opportunities for informal learning within their groups practice.

- Leaders can help facilitate informal learning, and maintain interest in the group through organizing ‘social’ activities that are not directly related to their group’s core practice. This will assist members in gaining greater

familiarity with other members, which can help increase informal interactions and networks and to fulfill the social aspects of practice.
- When new members join a group, they should be provided with the chance to learn about and participate in the full range of group activities. If a new member decides that they would like to specialize in a certain activity, groups should have mentorship opportunities available to pair more experienced individuals with newcomers.

Learning and connecting with individuals who are outside of groups is also an imperative to ensuring best practices for stewardship groups. Encouraging such boundary interactions is important for communities of practice in order to facilitate innovation in practices (Wenger et al., 2002). Several individuals in this study stated that their groups do not connect enough with outsiders. Groups must open their activities and meetings in order to encourage communications with outside groups.

Recommendation #4: Groups should include outside individuals in their practice.
- This can be accomplished by having special speakers at group meetings, collaborating with other groups for projects, seeking outside opinions on issues or participating in communications with other groups through list serves, notice boards and conferences.
- Groups must take advantage of existing networks (such as the PSkF); or aid in the development of local-level networks to communicate, collaborate with, and learn from other organizations with similar interests.
- For groups approaching outside agencies and professionals regarding watershed issues, they need to take a non-confrontational approach, and establish good rapport with these organizations.

Similarly, it was noted that recruitment of new volunteers is an issue for the study groups, especially Group 3. For a community of practice, recruitment of new individuals maintains the creativity and energy in a group's practice (Wenger et al., 2002). From this initial research, target audiences for Streamkeepers groups may include local landowners or watershed users, individuals seeking to apply or improve their skills, people who will benefit from

volunteer hours (such as students), or individuals seeking to improve their health (such as retirees).

Recommendation #5: Recruitment of new members to the group should be on-going, and should target specific audiences who are prone to- or would benefit from- volunteering in stewardship groups.

- In order to have more local watershed users join the group, having signage with contact information permanently up, and signs openly inviting the public to participate in activities or events in the watershed as they are taking place can be posted in the watershed.
- Participating in events that involve the broader public and using media are also good ways to encourage new volunteers to join.
- Groups may also consider posting their volunteer information (including benefits of participation) with coordinators for high school volunteering programs or seniors centers to encourage new members to participate in activities which may be of interest to them.

As already mentioned, groups should maintain an 'open door' policy to newcomers and ensure that they are able to progressively join the group- with the option for peripheral, occasional, active or core levels of participation. Including new, peripheral and occasional participants in communications through website updates, emails or phone calls is extremely important for keeping people informed and encouraging their participation.

Recommendation #6: Groups should provide the opportunity for various levels of participation in activities.

- Keeping members (and outsiders) informed of activities through communications such as emails and phone calls are important to ensure that people who are limited in their ability to participate in activities are able to learn about the progress the group is making, and choose which events they wish to attend.

7.3.3 Outside Agencies and Professionals

Actively cultivating the local knowledge possessed by stewardship groups provides outside agencies and professionals working in a watershed with the opportunity to have more efficient and effective watershed initiatives. When

agency staff approach stewardship groups to discuss the groups work, outside professionals should take a step back to reflect upon the following:

- How are they (or the agency they represent) perceived by the stewardship group?
- What are the agency's goals in working with the group? Are these goals aligned with the values of the group?
- What stage in the process (presented in Figure 6.2) is the agency involved in?
- What role can the agency play in-, and what contributions can they make to- stewardship groups?

For example, many members in this study expressed a high degree of frustration with DFO, even though they identified their CA as being very helpful. The CA is well respected and trusted, whereas the agency itself is not respected by these groups. As a result, the groups do not use DFO as a contact as much as they should.

Recommendation #7: DFO needs to evaluate and adjust its current activities and structure relating to community-based management in order to support and work with Streamkeepers groups in BC.

- DFO should respond to previous studies on community-based fisheries management in BC (e.g. Paish, 1999) and hold meetings with local groups and CAs to develop stronger support and policies for salmon stewardship.

All of the groups indicated that they have at least one contact with their local municipality who helps them approach issues and accomplish work in an efficient manner. These relationships have taken time to build, but have proven as assets to both the municipalities and the stewardship groups.

Recommendation #8: Outside agencies and professionals must foster trust and build good relationships with groups for effective collaborative efforts.

- Agencies and professionals should approach groups regarding how they can contribute to initiatives, and in turn clearly stating what your needs or expectations are from the group.

Stewardship coordinators and watershed managers should provide learning opportunities for groups in order to encourage innovative and effective practices

by groups and local watershed users. By providing support through financial and in-kind donations, agencies and professionals can build this local-knowledge base and encourage best practices. Those working at these levels should also encourage communications amongst stewardship groups at watershed or regional levels.

Recommendation #9: Outside coordinators, managers and agencies should support watershed groups with opportunities for learning and networking to promote innovation in- and best practices for- stewardship groups.

7.4 Areas for Future Study

The purpose of this exploratory study was to investigate the role of communities of practice in stewardship organizations. By completing initial exploratory research into the area, this thesis provides a strong foundation from which other studies can be initiated. The conceptual framework (Figure 2.4) applied to this research provided strong insight into the research problem and helped appropriately guide the analysis for the study, and subsequent development of a process model (Figure 6.2) to demonstrate stewardship group activities.

Having demonstrated that elements of communities of practice play a key role in the functioning of Streamkeepers groups, future studies should expand to include other case studies from different stewardship or community-based natural resources management initiatives. This would contribute by building upon, and strengthening the evidence presented here to generalize and expand the ideas to broader stewardship and resource management contexts.

Additional studies may seek to gain more in-depth information on groups by taking an ethnographic approach to the research problem, which can provide detailed insight into the processes by which groups operate. Such a study should also include a social network analysis, and discussions with outside groups and professionals working with stewardship groups. This could help further inform the conceptual framework as well as the process model presented in this study.

Similarly, future research on stewardship groups and communities of practice may take the approach of focusing on different elements of a community of practice (such as ‘community’) in order to add further to the findings presented in this research.

In future studies on stewardship, demographic data on stewards should be collected in order to contribute further to the literature on environmental stewardship motivations and behaviour. Due to the fact that very little academic literature exists on environmental stewardship, a broad range of social research is needed before the subject area will be sufficiently understood in an academic context.

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Appendix 1: A rational decision making approach to watershed planning (Heathcote, 1998) compared to the river basin management protocol outlined by Hooper (2005)

Steps	**Heathcote (1998, p.12)**	**Hooper (2005, p. 112-123)**
1	Develop an understanding of watershed components and processes, and water uses, water users, and their needs	Establish management and advisory entities
2	Identify and rank problems to be solved, or beneficial uses to be restored	Prepare resource inventories
3	Set clear and specific goals	Initiate studies and develop a monitoring system
4	Develop a set of planning constraints and decision criteria, including weights that may be assigned to criteria	Prioritize issues
5	Identify the appropriate method of comparing management alternatives	Scope the social decision system of the river basin and identify entry points
6	Develop a list of management options	Identify and prioritize options
7	Eliminate options that are not feasible	Prepare an integrated river basin management plan
8	Test the effectiveness of remaining options using criteria from number 5, and the decision weights from number 4	Build a river basin information exchange program
9	Determine the economic impacts and legal implications of the various (feasible) management options	Develop an implementation strategy and test options
10	Develop several good management strategies, with options, for decision makers	Implement strategy
11	Develop clear and comprehensive implementation procedures for the preferred plan	Monitoring, review, and feedback

Appendix 2: Interview questions and University of Guelph Ethics Board Consent forms given to participants in the study

CONSENT TO PARTICIPATE IN RESEARCH

Communities of practice in stewardship organizations

You are asked to participate in a research study conducted by Jillayne Peers, of the School of Environmental Design and Rural Development at the University of Guelph. The information gathered in this interview will contribute towards the completion of a Masters thesis in Rural Planning and Development.

The purpose of this study is to investigate the social dynamics of streamkeepers groups and the learning opportunities that arise for streamkeepers. These are important components of a theory called "communities of practice". The project aims to identify why individuals join Streamkeepers groups, and what role(s) Streamkeepers groups play in the lives of individual streamkeepers members.

If you volunteer in this study, you will be asked to participate in an interview (approximately ¾ to 1 hour) in which you, as a participant in a Streamkeepers group, will be asked to discuss and reflect upon:

- Why you joined the streamkeepers and how you membership has evolved since you first joined
- Goals and activities that members of your Streamkeepers group share
- How your group communicates and learns
- One successful and one failed project that your group has been involved in, and what learning came from these experiences
- What are the benefits and values to being a Streamkeeper?

Unfortunately, no compensation can be offered to you for your participation in this research. However, by participating in this study, you will be contributing towards a broader study on the role of social interactions in natural resources management. Once the interview information is analyzed, the researcher will provide the information on Streamkeepers groups to the Pacific Streamkeepers Federation (PSkF) to exemplify the importance of the work that each group is undertaking. Any suggestions for enhancing the efforts of Streamkeepers groups will also be provided.

No names of individuals or Streamkeepers groups will be used in the analysis or reports for this study. All individual interviews will be tape recorded and stored by the researcher. The researcher will make every effort to ensure that your contributions for this study are confidential. All audio and written information will not be connected to any individual identifying information. Personal information will be retained for the duration of the research process to provide opportunity for feedback.

The information gathered through this study will be stored by the researcher for the duration of the Masters program. The University of Guelph will house the final

documents produced through this study; however, the original data will be disposed of upon completion of the project.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Research Ethics Coordinator
University of Guelph
437 University Centre
Guelph, ON N1G 2W1

Telephone: (519) 824-4120, ext. 56606
E-mail: sauld@uoguelph.ca
Fax: (519) 821-5236

I have read the information provided for the study Communities of practice in stewardship organizations as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Date: _____

_____
Name of Participant

_____
Signature of Participant

_____
Name of Witness

_____
Signature of Witness

If you have any concerns, please contact:

Dr. John FitzGibbon
Professor
Rural Planning and Development
School of Environmental Design and Rural Development
University of Guelph
(519) 824-4210 x 56784
jfitzgib@rpd.uoguelph.ca

Jillayne Peers
MSc Candidate
Rural Planning and Development
School of Environmental Design and Rural Development
University of Guelph
(519) 824-4210 x 52859
jpeers@uoguelph.ca

Communities of practice in stewardship organizations: Pacific Streamkeepers Federation

Interview Questions

Streamkeeper Group: Date (yy-mm-dd):

Do you give your consent to participate in this study? Yes / No

1. How long have you been a member of the Streamkeepers? Have you been (or are you currently) involved with other volunteer groups?

2. Originally, why did you join the Streamkeepers? Have those reasons changed since you first joined?

3. What are your group's formal goals? Are there informal goals and values within your group as well? Please elaborate on these goals/values.

4. What types of activities does your group undertake?

5. How does your group communicate and organize events or projects?

6. Do you spend time with members of your Streamkeepers group outside of Streamkeepers-related activities?

7. What types of different 'roles' do people play in your group? Does your group use outside contacts to accomplish work?

8. In your opinion, who is a "Streamkeeper" (define)? Do you see yourself as a "Streamkeeper"? Do other people see you as a "Streamkeeper"?

9. Within the greater community, how is your Streamkeepers group viewed?

10. Has being a part of this group been of benefit to you? Have you noticed any changes in yourself or in the group since joining?

11. Do you learn much from other members within your group? Do you learn much from group activities?

12. What do you consider to be one of the most successful projects that you have been involved with through your Streamkeepers group? Has your group had any projects that didn't work out as planned? What did you learn from these experiences?

13. What were your expectations when you originally joined the Streamkeepers? What are your expectations of the group presently (into the future)?

14. What do you value (most) about your experiences working with your Streamkeepers group?