EXPLORING ABORIGINAL FORESTRY AND ECOSYSTEM-BASED MANAGEMENT: A CASE STUDY OF COWICHAN TRIBES

by

Claire Hutton
B.Sc. Biology and Environmental Studies (Honours), Trent University, 1997

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Name:	Claire Hutton
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Examining Committee:

Dr. Wolfgang Haider
Senior Supervisor
Assistant Professor
School of Resource and Environmental Management
Simon Fraser University

Dr. Ken Lertzman
Associate Professor
School of Resource and Environmental Management
Simon Fraser University

Dr. Murray Rutherford
Assistant Professor
School of Resource and Environmental Management
Simon Fraser University

Date Approved: March 29, 2004

SIMON FRASER UNIVERSITY

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ABSTRACT

As First Nations people in British Columbia regain control over the land and resources in their traditional territories, frameworks to guide aboriginal forestry will be required. First Nations share a common desire for control over their forest resources and need to be able to select approaches to management that reflect their values, meet their objectives, and suit the characteristics of their land-bases and communities. Ecosystem-based management (EBM) has been proposed as an appropriate tool for First Nations interested in pursuing forestry that meets traditional, social, economic, and ecological objectives. Major themes of EBM include maintenance of ecological integrity, adaptive management, cooperation and collaboration, and integration of social values. In this study, I explore the usefulness of EBM as a tool for aboriginal forestry at Cowichan Tribes, a First Nation located on southeastern Vancouver Island, British Columbia. Through case study research, I examine the opportunities, challenges, and options for implementation associated with Cowichan Tribes' approach to forestry based on an analysis of data from a survey of community forest values and an evaluation of a recently developed Cowichan Tribes' Forest Policy. Cowichan Tribes' Forest Policy shares characteristics of an EBM approach to forestry. Opportunities associated with using EBM as a tool for aboriginal forestry at Cowichan Tribes include that it may: facilitate the incorporation of traditional values and knowledge, enhance participation in forest related activities, provide alternatives to status quo forest practices, provide opportunities for community involvement, provide opportunities to develop better relationships with external parties, and validate community social values within a resource management framework. Challenges posed by using EBM as a tool to aboriginal forestry involve: limited control over the landscape, limited capacity to do research, forgoing short-term economic benefits, lack of institutional flexibility and long-term support, lack of meaningful accommodation by external parties, and difficulty soliciting community participation. The main current options for First Nations involvement in forestry in BC are each evaluated in terms of their usefulness for Cowichan Tribes. The options were rated in the following order of descending usefulness: co-management, treaty settlement lands, on Reserve, Crown tenures, and joint-ventures.

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1.1 Aboriginal Forestry and Ecosystem-based Management

The relationship between the First Nations[1] people of BC and the forest environment was altered with the occurrence of European contact in the 1800s (Kew & Griggs 1991, TFNF 1991, Carlson 1997, Turner et al. 2000). Significant changes to the landscape occurred and the ability of First Nations to use and manage the land was altered. Through a number of mechanisms, aboriginal people were excluded from their land-bases and denied the opportunity to participate in the management of resources (Little Bear et al. 1984, McGregor 2002, Ross & Smith 2002). Being forcibly disconnected from their land has had far-reaching consequences and is considered one of a number of factors associated with the social and economic difficulties experienced by many aboriginal communities today (Kendall 2001).

Over the last 30 years, Canadian court cases and legislation have established that the systematic exclusion of aboriginal people from decisions regarding the land-base is no longer acceptable to society at large (Notzke 1994, House 1998). The growing recognition of aboriginal rights and title is resulting in an increase in First Nations' access to forest resources as well as participation in forest management (McGregor 2002, Boyd 2003, Parsons & Prest 2003). As First Nations become increasingly involved in the management of lands and resources, information on frameworks to guide decision-making, planning, and operations for aboriginal forestry will be required (Bombay 1998).

The needs and values of First Nations people in different communities and living in different ecosystems are diverse and, consequently, aboriginal forestry is not represented

[1] Various terms are used to describe the people who originally occupied the North American continent prior to European Contact. Some debate surrounds the use of the different terms. In this research project the terms "First Nations", "aboriginal people", and "indigenous people" will be used interchangeably.

by a particular approach to forest management and cannot be encapsulated in a single framework. Despite this, First Nations share a common desire for control over their forest resources (Curran & M'Gonigle 1999). As First Nations people gain increased control over natural resources, they need to be able to select approaches to management that best meet their objectives and suit the characteristics of their land-bases and communities (Tresder & Krogman 1999). In this research paper, I focus on issues related to First Nations who are interested in incorporating traditional values into their approach to forest management and planning.

Some First Nations' communities are interested in pursuing forestry that explicitly incorporates traditional values alongside other social, economic, and ecological values (Parsons & Prest 2003). Traditional values encompass the skills and knowledge acquired by aboriginal people over time that relate to their culture and their intimate connection with the land. Traditional ecological knowledge (TEK), which includes traditional values, is embedded in First Nations' worldviews and is connected with cultural, spiritual, ecological, and subsistence components of daily life (Turner et al. 2000). "Traditional" is not synonymous with historic. Traditional activities and values as they exist today have been shaped by many years of experience typically extending back to historic periods and continuing to evolve in a modern context (Berkes 1999, Sherry & Myers 2002, Hunn et al. 2003).

The importance of incorporating traditional values into aboriginal forestry is being increasingly recognized as necessary to ensure effective and meaningful participation of aboriginal people in land and resource management (Puttock et al. 2000, Ross & Smith 2002, CCFM 2003, NFSC 2003). The desire to incorporate traditional values may be attributable to the fact that aboriginal communities have collective histories to draw on and have longer and often closer connections to the particular ecosystems in which they are living than many other cultures (CSSP 1995a). Incorporating traditional values into forestry may help to maintain and/or re-establish the relationship between aboriginal people and the forest (McGregor 2002), which in turn may result in increased participation and/or re-engagement in aboriginal culture. Incorporating traditional values into forestry provides an opportunity for TEK to be transferred from one generation to the next (Parsons & Prest 2003). There is also a growing recognition that incorporating

traditional values into forest management may lead to more sustainable land use practices (UNCED 1992a, Higgins 1998, Nakashima 1998, Parsons & Prest 2003).

Some aboriginal communities find it challenging to effectively incorporate traditional values into forest management, given modern policy and economic environments. Several authors propose that ecosystem-based management may be an appropriate tool for First Nations interested in pursuing forestry that meets traditional, social, economic, and ecological objectives (CSSP 1995a, Booth 1998, Trosper 1998, Berkes 1999, Burda et al. 1999, Curran & M'Gonigle 1999, Lertzman 1999, Turner et al. 2000). Ecosystem-based management (EBM) was developed as an alternative approach to resource management and has been applied to a variety of fields including fisheries, parks, wildlife, and forest management (Slocombe 1998b). In forest management and planning, EBM is regarded as an alternative to the modern industrial forestry that has dominated much of the North American landscape over the last century (Swanson & Franklin 1992, Grumbine 1997, Kohm & Franklin 1997). Themes that characterize ecosystem-based management include, but are not limited to, maintenance of ecological integrity, adaptive management, cooperation and collaboration, and integration of social values (Rigg 2001).

The usefulness of ecosystem-based management as a tool for aboriginal forestry has been hypothesized, but is not well substantiated in the literature. In order to further explore this topic, I chose to undertake case study research with a First Nations Band, Cowichan Tribes, located on southeastern Vancouver Island, British Columbia (BC). My case study research involved the analysis of data from a survey of community forest values, an evaluation of a recently developed Cowichan Tribes' Forest Policy, and direct field observations gathered during my year working for the Cowichan Tribes' Environment Department.

1.2 Research Objective and Questions

My overall research objective in this project is to explore if ecosystem-based management (EBM) can be used as a tool for aboriginal forestry where there is an interest in incorporating traditional values. In response to the breadth and diversity of the

two main topics (ecosystem-based management and aboriginal forestry), I have focused this project on the specific case of aboriginal forestry by Cowichan Tribes and a particular conceptualization of ecosystem-based management[2]. This conceptualization is represented by the four themes of ecosystem management as identified by Rigg (2001) in her analysis of the larger body of literature (see section 2.1 and 3.2.1 for a detailed discussion). Specifically, I will address the following research questions:

- What is Cowichan Tribes' approach to aboriginal forestry?
- What are the opportunities and challenges posed by using EBM as a tool for aboriginal forestry at Cowichan Tribes?
- What options exist for Cowichan Tribes' participation in forestry that will best facilitate their approach to aboriginal forestry?

1.3 Rationale

I have several rationales for pursuing this research project. First, I address current gaps in both the literature of aboriginal forestry and ecosystem-based management, where limited attention is paid to tools available for First Nations interested in incorporating traditional values into forest management and planning. Second, I provide information for First Nations who are interested in pursuing forestry that incorporates traditional values and are considering the use of an ecosystem-based management framework. Third, I provide information on aboriginal forestry for the wider resource management community in order to promote informed and respectful interactions between aboriginal and non-aboriginal people involved in forest management in BC. Fourth, this research meets my personal objective of engaging in applied research that results in a tangible outcome to contribute to the needs of a community. Overall, the information generated by this research project will be useful for Cowichan Tribes, other aboriginal communities pursuing forestry, researchers, resource practitioners, and policy-makers that influence aboriginal resource management.

[2] The terms ecosystem-based management and ecosystem management are often used interchangeably but many academics and practitioners do not think that the terms share the same meaning. In section 3.2.1, I discuss the variations between the two terms and expand on my choice to use the term ecosystem-based management (EBM) for the purposes of my research.

1.4 Report Organization

I will present my research in six chapters. In this first chapter, I outline the research objective and questions, and provide a rationale for the research. In the second chapter, I describe the research methods employed in the project and provide a brief description of the case study. In the third chapter, I provide an overview of the relevant literature on aboriginal forestry and ecosystem-based management. In the fourth chapter, I present the results from the analysis of the community survey data and the evaluation of the forest policy in order to characterize Cowichan Tribes' approach to aboriginal forestry. In the fifth chapter, I discuss the usefulness of ecosystem-based management as a tool for Cowichan Tribes (identifying opportunities, challenges, and options). In the final chapter, I present recommendations based on my research and offer concluding remarks.

2 Methods and Case Study Description

Qualitative research can be divided into four categories: exploratory, explanatory, descriptive, and predictive (Marshall & Rossman 1989). This research project is both exploratory and descriptive as it seeks to document and investigate the phenomena of interest – the usefulness of ecosystem-based management and aboriginal forestry. The research project employs multiple methods to address the research questions including a case study involving analysis of community survey data, an evaluation of a forest policy, and direct field observations.

2.1 Literature Review

The purpose of the literature review is to provide background information on the topics of aboriginal forestry and ecosystem-based management. The information I provide is not an exhaustive review of the academic literature; rather, it is the information I consider necessary to frame the discussion for this research.

In the section on aboriginal forestry, I discuss the historical and changing relationships between aboriginal people and the forest since the time of European contact in British Columbia. I provide information on the current federal and provincial initiatives that influence aboriginal forestry, and specifically I review the current options available to First Nations in BC interested in participating in forestry. Throughout the section, I also discuss the usefulness and necessity of incorporating traditional values into aboriginal forestry. A thorough exploration of this topic is lacking in both the aboriginal forestry and EBM literature.

In my review of the ecosystem-based management and ecosystem management literature, I focus on one conceptualization based on four main themes of ecosystem management identified by Rigg (2001). Rigg's review conveniently distills a large body of literature into themes emerging from academic, government, and industry sources.

The four themes (ecological integrity, adaptive management, cooperation and collaboration, and integration of social values) serve as a manageable analytical framework to guide the discussion of aboriginal forestry and EBM in the context of Cowichan Tribes for my research paper. By using these four themes to explore the topic of EBM, I do not intend to suggest that the themes should be used to exclusively define EBM nor should the themes be weighted equally in terms of their importance as characteristics of EBM.

The conceptualization of EBM that provides the framework for discussion in this research paper also draws on the work of other authors that write about both ecosystem management and ecosystem-based management[3]. My choice to use the term ecosystem-based management is a result of my understanding that EBM is an evolving concept that has roots in ecosystem management, but has broadened conceptually and become the term associated with innovate forest planning and management in British Columbia. In addition, the clear focus on ecological integrity associated with EBM seems a more appropriate point of departure for a discussion of aboriginal forestry which is described as often being more biocentric than other current models of forest management (Parsons & Prest 2003).

2.2 Case Study Method and Applied Research Techniques

Case study research is oriented toward multiple sources of evidence where both quantitative and qualitative data are considered important (Yin 1993). My case study research of Cowichan Tribes' approach to forestry involved the analysis of data from a community survey, an evaluation of Cowichan Tribes' forest policy, and direct field observations based on my work with Cowichan Tribes' Environment Department. Case study research is particularly appropriate when the phenomenon under study is not readily distinguishable from its context and the inclusion of context will increase richness (Yin 1993). Aboriginal forestry at Cowichan Tribes must be understood within the larger context of Cowichan community, culture, and history. The case study method also provides a manageable opportunity for a researcher to study one aspect of a problem in

some depth (Blaikie 2000). Both aboriginal forestry and ecosystem-based management are expansive topics, and using the case study method provides an opportunity to focus on one specific circumstance in order to begin to understand the usefulness of ecosystem-based management as a tool for aboriginal forestry. Limitations of the case study method include constraints on the applicability of results beyond the specific case. Results are limited in time and space and therefore generalizing beyond the initial conditions presented in the case study is a matter of judgement (Blaikie 2000).

During my case study research I was employed by Cowichan Tribes' Environment Department. Conducting research while being involved in the subject of your research is referred to as applied research. Applied researchers can use participant-observation techniques and often collect direct field observations during their research (Marshall & Rossman 1989). Participant-observation research methods are considered an appropriate and effective tool when working with First Nations communities, compared to methods based on "unbiased" observation where the researcher has no substantive involvement with the research subject (Smith et al. 2000). Approaching First Nations as an "object of study" can be considered ethically inappropriate and is methodologically incorrect from the perspective of many First Nations' worldviews because it is contrary, in most cases, to requirements of cultural protocol and principles of respect and sincerity (Simpson 1998, Lertzman 1999). Distrust of academic investigators exists within many aboriginal communities due to historical patterns of researchers following research conventions at the expense of the community values and protocols. As a result of this history, researchers must redefine research frameworks to ensure that cultural sensitivity is meaningfully incorporated (McAvoy et al. 2000, Piquemal 2000). As an applied researcher, participating in community processes enables the development of trust and respect between community members and the researcher, and contributes to the cultural sensitivity of the project (Kowalsky 1996).

Challenges presented by the use of participant-observation methods include the ability of the researcher to maintain perspective as an outside observer when she/he is participating intimately in a project or process over an extended period of time (Whyte

[3] See section 3.2.1 for a further discussion of the differences between ecosystem management and ecosystem-based management.

1984). In order to address this limitation of participant-observation, I frequently removed myself, either physically or mentally, from my role as an employee and challenged myself to be critical about the processes in which I was participating. I recorded my observations from as neutral a perspective as possible. Bias is regarded as a limitation in case study research where participant-observation techniques are used (Marshall & Rossman 1989). In response to this limitation, it is critical that researchers strive to reduce the amount of bias in their research by approaching situations objectively. However, bias and subjectivity will always challenge researchers, as they are humans informed by their own life experiences. In order to address the issue of researcher bias, it is useful to clarify one's own bias as a researcher and the context within which the research occurs (Lertzman 1999, Blaikie 2000). On a personal level, I bring to my research the bias associated with being a young Caucasian woman, raised in a middle class urban neighbourhood, trained at a university level in the natural and social sciences, with an interest in issues related to social and environmental change. An additional source of bias results from my involvement in the activities and material that I evaluate as a part of this research project. I was an active participant as an employee of Cowichan Tribes' Environment Department in conducting the community survey (as a member of the survey team) and co-developing the forest policy. Although I am evaluating the results of the survey and the policy in this research project, my role in the respective processes was as an employee not as a researcher.

2.3 Case Study Profile

Cowichan Tribes are a First Nations Band located in and around Duncan, BC on southeastern Vancouver Island. Cowichan Tribes are one of the largest First Nations in BC by population with a present day population of 3,697 Band members, 53% of whom live on Reserve (INAC 2003). Cowichan Tribes are spread over nine Reserves totaling 2,389 hectares (INAC 2003). The locations of the seven inhabited Reserves correspond with some of the historical village sites that the Cowichan people previously occupied.

Cowichan Tribes' asserted traditional territory covers approximately 334,000 hectares of land and extends north of Ladysmith, west of Cowichan Lake, south of

Shawnigan Lake, and through the Gulf Islands and up the Fraser River[4] to the east. Figure 1 is a map of Cowichan Tribes' traditional territory (also known as Hulq'umi'num traditional territory). In the map below, the dark polygons near Duncan are Cowichan Tribes' Indian Reserves.

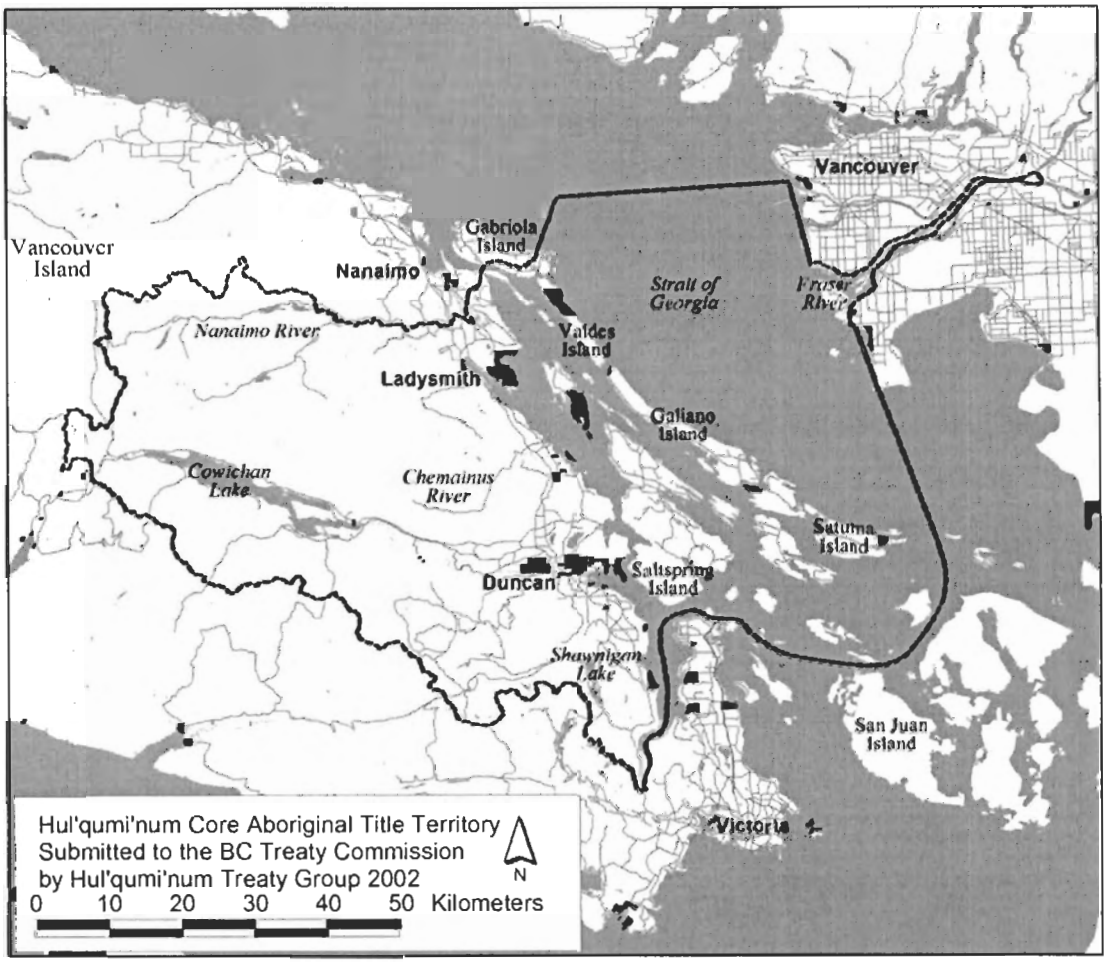

Figure 1. Map of Cowichan Tribes' traditional territory[5].

Cowichan people are part of the larger Coast Salish cultural group and traditionally spoke the Hul'qumi'num language (Ashwell 1978). Historically, Cowichan communities relied heavily on the forested environment within their traditional territory. Before European contact, Cowichan people lived, traveled, and used the lands within

[4] Historically, Cowichan people traveled from Vancouver Island across the Georgia Straight and up the Fraser River where they established seasonal fishing camps. Although the Fraser River is part of Cowichan Tribes' asserted traditional territory, the assertion of rights and title regarding terrestrial issues are generally focussed on the Gulf Islands and southeastern Vancouver Island in the present day context.

[5] Copyright, Thom 2004, reprinted by permission.

their territory where forest resources provided food, medicines, materials for clothing, housing, and transportation (Neary 2001). In addition to supporting Cowichan peoples' physical needs, the forest also sustained people spiritually and emotionally by providing the setting and resources required for many cultural activities (Neary 2001).

Cowichan people have developed a breadth of knowledge about the forest and its uses, referred to as traditional ecological knowledge (TEK), that has formed over thousands of years. In a recent presentation by the Hul'qumi'num Treaty Group (of which Cowichan Tribes are a member), the Chief Negotiator describes the connection between Hul'qumi'num people and their land:

> From these times immemorial, Hul'qumi'num people have owned our traditional territories. Hul'qumi'num place names densely blanket the land. Every bay, every peninsula, every rocky island, every bend in the rivers have Hul'qumi'num names which provide the keys to the extensive knowledge needed to harvest and steward the resources of the territory owned by the Hul'qumi'num people. From the central, ancestral villages, Hul'qumi'num people made extensive use of our territories. The oral histories tell about the family-owned hunting territories and fishing grounds. They tell about the camus-root and berry grounds owned by women. They tell about the clam beds, hunting grounds, and fish weirs held in common for the community to use. These ancestral titles to the territories have never been extinguished. The rights to harvest and be the stewards of these resources come from the obligations created by the Creator and will continue into the future. (HTG 2001:1)

Cowichan people have a long-standing and intimate relationship with the forest.

Although the relationship between Cowichan people and the forest has been altered over time, Cowichan Tribes are now making active attempts to become increasingly involved in land management and forestry. The interest in regaining control over both their land and resources within the traditional territory manifests itself in a number of ways, including participation of community members in forest-related activities, participation in treaty negotiations, involvement in negotiations with the provincial government regarding forest resources, exploration of joint venture opportunities with forest companies, and development of policies and strategies at the Band level to guide future work in forest management and planning. Both the community survey data and the forest policy that are used in this research project are a component of developing forestry-related policies and strategies.

Additional information about Cowichan Tribes is provided in section 3.1.4.

2.4 Cowichan Tribes' Community Survey Data

2.4.1 Background

In June and July of 2001, Cowichan Tribes' Environment Department conducted a survey of Cowichan community members to assess the needs and values of Cowichan members regarding forests and forest management. The survey was a component of a larger project at Cowichan Tribes to develop a forest policy informed by community perspectives. The three main themes of the community survey were forest values[6], forest related activities, and forest management and practices. Survey results were compiled in report called "Community Values: Informing Cowichan Tribes' Approach to Forestry – Report on Responses to Cowichan Tribes' Community Forest Survey" (Cowichan Tribes 2001). The analysis of the community survey presented in this paper is based on this report.

The survey team (Environment Department staff[7] and a community researcher) selected a sample of Cowichan community members for in-person interviews, including people of different ages, from different villages, and people living on and off Reserve. The survey team conducted the interviews in the Cowichan Tribes' Environment Department office or in people's homes, depending on the preference of the respondent. The survey team was of the opinion that personal interviews would facilitate the greatest level of community participation (as opposed to telephone or mail surveys) because "visiting and chatting" is generally considered as the most effective and culturally

[6] Forest values can be used as an indicator of the relative importance of forest resources, and are therefore important to examine because they predispose attitudes and ultimately behaviour. By understanding forest values that communities hold, then planners/managers are better equipped to plan and effectively implement policies, strategies, and programs (McFarlane & Boxall 2000, Tarrant et al. 2003).

[7] At the time the survey was conducted, I was employed by Cowichan Tribes' Environment Department and was a member of the survey team. In my position with the Environment Department, I also authored the final report that summarized the survey results.

appropriate method to communicate with community members[8]. McAvoy et al. (2000) suggest the best research methods reflect the epistemology of aboriginal people and that the personal semi-structured interview is the social research method used most successfully in aboriginal communities.

The Cowichan Tribes' community survey interviews took, on average, 40 minutes to complete, but varied between 20 minutes and 4 hours (this time also included additional questions on training and employment collected for use by the Environment Department). The survey instrument employed semi-structured interview techniques by combining a series of open and close-ended questions. During the interviews, the survey team took notes on the participants' responses, and later transcribed and coded them. Overall, the interviews were approached with flexibility to allow people to express their ideas in a manner that promoted dialogue. One hundred and sixty two (162) community members participated in the interviews over the two-month period. In addition, seven people declined the opportunity to participate in the interview and thirty people missed or cancelled appointments and were unable to reschedule.

Conducting a survey of a portion of the Cowichan population to better understand community values as they relate to the forest was a suitable choice because survey research is an appropriate mode of inquiry for making inferences about a large group from data drawn from a relatively small number of individuals from that group (Marshall & Rossman 1989). However, according to Salant & Dillman (1994) there are four possible sources of error in survey research (sampling error, non-response error, measurement error, and coverage error), which could affect the usefulness of the results. Each of these sources of error is discussed below.

Sampling Error – Sampling error occurs when researchers survey only a subset or sample of all the people in the population (Salant & Dillman 1994). Therefore, a degree of sampling error characterizes all survey research unless a census is conducted. Sampling error is based on the sample size relative to the population size and is reported as a confidence level with an associated margin of error. Generally, a 95% confidence

[8] Additionally, conducting personal interviews provided an important opportunity to raise awareness within the community about forestry-related initiatives at Cowichan Tribes and an opportunity to further develop the relationship between Cowichan Tribes' community members and the Cowichan Tribes' Environment Department.

level with a margin of error of +/- 5% is considered preferable in social science research (Suvedi 2003). In the Cowichan Tribes' community survey, the sample size, in relation to the total adult population, resulted in an approximate margin of error between +/- 7-8% with a 95% confidence level (Salant & Dillman 1994). Although the sampling error for the community survey exceeds the preferable level of error for social science research, the number of interviews the survey team was able to conduct (a key determinant in the sample size) was constrained by time, funds, and staff availability. In many studies funds are allocated and deadlines set before the specifics of a study have been decided and result in time and cost having a very definite effect on the size of the sample (Satin & Shastry 1988).

Non-Response Error – Non-response error occurs if a significant number of people do not respond to a survey and the non-respondents are different in a way that is important to the study (Salant & Dillman 1994). The response rate associated with the Cowichan Tribes' community survey was 81% - 37 out of 198 contacts did not participate in the survey. According to some authors, a response rate of less than 70% indicates that non-response error may be a problem (Salant & Dillman 1994), while other authors suggest that procedures for controlling non-response error should occur when a response rate of less than 85% is achieved (Lindner et al. 2001). Out of the 37 non-respondents, only seven people verbally refused to participate in the survey. The additional 30 people missed appointments and were unable to reschedule. Based on the circumstances of why people did not respond, I do not feel that non-response error is a problem for the Cowichan Tribes' survey.

Measurement Error – Measurement error occurs when a respondent's answer to a given question is inaccurate, imprecise, or cannot be compared in a useful way to other respondents' answers (Salant & Dillman 1994). Measurement error is often the result of poorly worded or structured survey questions. Answers to the close-ended questions in the Cowichan Tribes' community survey are comparable among respondents. Answers to the open-ended questions were coded in order to compare answers between respondents. A degree of measurement error may be associated with survey questions that involved explanations and discussions between the interviewer and the respondent. For example, one question in the survey was accompanied by a discussion of the pros and

cons of three types of logging. While the interviewers attempted to be consistent and structured in their discussions, there may be a level of measurement error associated with the results of this question if unknowingly the interviewers offered different amounts of information to the respondents. Measurement error can also occur when a respondent's answer is inaccurate or imprecise. In interviews there is no guarantee that what people say is a true account of what people actually think (McNeill 1985). However, it is difficult to minimize the error caused by people not being honest. Overall, the format of the survey questions was conducive to collecting answers that were comparable among respondents and there are no outstanding reasons that people would purposefully be untruthful in their answers. The measurement error associated with the community survey is likely to be low.

Coverage Error – Coverage error occurs when the list from which a sample is drawn does not include all elements of the population that the researcher wishes to study (Salant & Dillman 1994). In order to achieve statistical confidence in a survey from a quantitative perspective, it is important to clearly identify the target population, compile or acquire a population list, and select the sample using probability sampling methods to ensure that all members of the population have an equal chance of participating in the survey (Salant & Dillman 1994). In the case of Cowichan Tribes' community survey, the survey team could not access a complete list of Band members with relevant demographic information. The Band administration was unable to provide the information due to confidentiality issues. Consequently, the survey team did not develop a sampling strategy that relied solely on probability methods. Rather, combinations of methods were employed to identify a sample. For this reason, the highest degree of error associated with the Cowichan Tribes' community survey is likely to be coverage error. Methods for identifying survey participants included random sampling from a list of a portion of the population that the survey team did gain access to, conducting door-to-door interviews with equal effort at each of the villages, randomly selecting people from different departments working at the Band office, requesting volunteers through posters and advertisements in the community newsletter, systematic sampling of community members lining up for their welfare cheques, and soliciting interested individuals from elders' luncheons and the youth council. Although the approach to sampling may appear

unrigorous, the survey team was working with the resources available to them and attempted to survey a wide range of people from the community, which is considered the best compromise when sampling issues prevent the adoption of more standard approaches (Marshall & Rossman 1989).

It is important to consider that the preceding discussion regarding the validity and level of confidence associated with the community survey results is predicated on an analysis within a quantitative framework. Some social researchers consider the principles of probability sampling as inappropriate for smaller-scale, qualitative research (Denscombe 1998). An alternative framework based in qualitative survey research methodology, such as grounded theory, could be applied to the process and results of Cowichan Tribes' community survey and would likely produce different outcomes regarding the reliability and generalizability of the results.

Cowichan Tribes' Chief and Council reviewed the survey results and condoned their use in informing the direction of the subsequent forest policy. This suggests that the community survey results were considered valid and applicable by Chief and Council. In this research paper, I draw on the community survey data to characterize Cowichan Tribes' current conceptualization of aboriginal forestry. I am assuming that the results of the community survey are indicative of the needs and values of the larger community of Cowichan people, beyond the individuals who participated in the survey.

2.4.2 Analysis of Data

In order to characterize Cowichan Tribes' approach to aboriginal forestry, in this paper I analyze the results of the community survey both qualitatively and quantitatively. The data that I present and analyze are based on the final report entitled "Community Values: Informing Cowichan Tribes' Approach to Forestry – Report on Responses to Cowichan Tribes' Community Forest Survey" (Cowichan Tribes 2001). In section 4.1, the results of the survey are presented in three sections that correspond with the main themes of the community survey: forest values, forest-related activities, and forest management and practices.

I used simple descriptive statistics and other quantitative statistical applications to present the survey results, including an analysis of the rating of the twelve forest values.

First, I explored these ratings with a Principle Component Analysis (PCA) to uncover the relationship between the various forest values (variables). In a number of studies, PCA is used to delineate attitude groups from survey data collected on attitudes towards forest and environmental values (Yarrow & Guynn 1997, Dunlap et al. 2000, McFarlane & Boxall 2000). The PCA method is used to reduce the number of variables and detect a structure in the relationships among the variables (Statsoft 1984). Doherty (2003) suggests that when using PCA, the combination of variables in each component may have a conceptual interpretation. In the analysis of the community survey results, I present my interpretation of the variable components (groupings of forest values). Secondly, I subjected the results of the PCA to a Cluster Analysis (using Squared Euclidian Distance and Ward Method in SPSS) to investigate if different groups of respondents could be identified based on the ratings of forest values. Cluster analysis is used in exploratory research to find the "most significant solution possible" and does not require an *a priori* hypothesis (Statsoft 1984). In the case of the community survey results, the outcome of the Cluster Analysis is a number of clusters, each representing a portion of the sample, which rated forest values in similar ways. The results of the Principle Component Analysis and the Cluster Analysis provide a more detailed and accurate portrayal of the importance of various forest values to the participants in Cowichan Tribes' Community Survey.

2.5 Cowichan Tribes' Forest Policy

2.5.1 Background

Cowichan Tribes identified the need for a policy document to provide strategic direction on forest management and planning within the traditional territory. In response to this need, Cowichan Tribes' Environment Department secured funding to develop a forest policy. The purpose of creating the forest policy was to develop a document that outlined Cowichan Tribes' preferred approach to forest management. The policy could then be used as a tool for negotiations and a guide for the type of forestry that Cowichan Tribes would like to see pursued. The forest policy is an attempt to articulate a vision of

what Cowichan Tribes think forest management should look like, which will subsequently be used as a tool to work towards that vision. To date, the policy has no legal authority and cannot be enforced. Rather, the intent of the policy is to help guide decision-makers, both within Cowichan Tribes and within companies, organizations, and governments operating within the traditional territory, to ensure that forestry is congruent with Cowichan Tribes' aboriginal interests.

The initial stage of the forest policy development involved conducting the community survey to assess the needs and values of Cowichan community members regarding forests and forest management. The subsequent stage involved in-depth research into the ecological literature and research into prescriptive guidelines and approaches to sustainable forest management taken by other governments, First Nations, and organizations. The content of the resulting forest policy was therefore a combination of community values as articulated in the community survey, and information gathered through various sources in the literature. The forest policy document is a broad framework consisting of goals and objectives under eight headings that cover a diversity of topics.

Upon the completion of a working draft, copies of the policy were subject to an iterative review by the Cowichan Tribes' Environment and Resource Committee, and then a subsequent iterative review by Chief and Council. Chief and Council adopted the final draft of the forest policy in August 2002. The evaluation of the forest policy presented throughout this research paper is based on the document "Cowichan Tribes' Forest Policy" (Cowichan Tribes 2002).

2.5.2 Evaluation of Policy

The Cowichan Tribes' Forest Policy (Cowichan Tribes 2002) will be evaluated from two perspectives. First, I will evaluate the policy based on its level of consistency with the results of the community survey. Second, I will evaluate the policy based on the four themes of ecosystem-based management identified by Rigg (2001), to determine the relationship between Cowichan Tribes' approach to aboriginal forestry and one conceptualization of EBM.

3 Literature Review

3.1 Aboriginal Forestry

3.1.1 Historical Relationships with the Forest

Before the arrival of European settlers, First Nations' people of coastal BC lived within an environment where relationships with the land were integral to the structure and formation of their societies (Turner et al. 2000). In addition to being the focus of spiritual values, resources from the forest provided food, shelter, medicines, clothes, and other materials (TFNF 1991). The harvesting and use of forest resources was informed and guided by traditional ecological knowledge (TEK). Turner (1997:292) summarizes:

> The indigenous people of [the Northwest Coast] forest region had a deep and broad understanding of natural ecological systems, an understanding that is underlain by their traditional spiritual beliefs. Moreover, they used this knowledge to practice sustainable management and harvesting as well as optimization of resources for food, material, and medicine.

TEK is best seen as an integrated package that includes local knowledge and classification systems, environmental practices and management systems, social institutions that provide rules for management systems, and worldviews that constitute the ideological or ethical basis of these systems (Berkes 1999).

TEK is situated within, and informed by, a culture's worldview (Nakashima 1998, Berkes 1999). Critical to the worldview of coastal peoples in BC was a belief in the innate power and spirituality of all things in the environment, a respect for other life forms and entities, a concept of interactive relationships with other life forms, and a close identification with ancestral lands (Turner 1997, CSSP 1995a, Smith et al. 2000). The understanding that humans are not separate from the natural world lead to intimate connections between the use of forest resources and the cultural/spiritual values of the

indigenous people of BC (Notzke 1994). The worldview of many traditional cultures resulted in the development of strategies and institutions that enforced the sustainable use of resources and sanctioned against waste and destruction (Notzke 1994, Turner 1997, Berkes 1999, Marshall 1999, Hunn et al. 2003).

First Nations' patterns of resource use and land management were changed as a result of European colonization. First Nations have been largely excluded from the land and denied the power to influence decisions regarding the land-base (Notzke 1994, McGregor 2002). In BC, various events have contributed to aboriginal peoples' loss of control over their land-base and the associated degradation of societal knowledge regarding traditional management and practices. European diseases, to which aboriginal people had no immunity, killed roughly one-third of BC's aboriginal population (McMillan 1988). The massive depopulation left many communities weakened and demoralized, and resulted in a significant loss in the collective knowledge held by communities (TFNF 1991). Treaties between the aboriginal people and the provincial government were not signed in the majority of British Columbia, rather the Crown assumed title to land that was never legally surrendered (Tennant 1990). First Nations access to both land and resources was limited by the province's assumption of Crown title and the subsequent relocation of aboriginal communities on to Indian Reserves (Miller 1989). The removal of aboriginal people from their traditional territories on to Reserves decreased the ability of communities' to practice their culture and participate in their lifestyle (Garvin et al. 2001).

In 1871, BC entered confederation by signing the *British North America Act*, which gave federal authorities the exclusive jurisdiction over "Indians and lands reserved for Indians". The *Indian Act* was established as a vehicle for administering Indians and Indian lands. In attempts to assimilate aboriginal people, restrictions were placed on collective and individual rights through the *Indian Act* (Little Bear et al. 1984, McMillan 1988, Tennant 1990). Many mechanisms were used by the federal and provincial governments to assimilate aboriginal people with hopes of eradicating or transforming traditional values into modern European values. These efforts were not wholly successful and the desire to incorporate traditional values into land management still exists in many First Nations communities today (Parsons & Prest 2003).

3.1.2 Canada and BC

In light of historical injustices, the Canadian government increasingly recognizes the need for aboriginal people to play an effective and meaningful role in forest management in the present day. Issues related to aboriginal forestry are addressed in a number of official policy statements endorsed by the federal government including national forest strategy documents, criteria and indicator documents, and international agreements (Treseder & Krogman 1999). Canada's fifth National Forestry Strategy (2003-2008) includes an objective dealing with the rights and participation of aboriginal peoples. Objective 3 reads "accommodate Aboriginal and treaty rights in the sustainable use of the forest recognizing the historical and legal position of Aboriginal Peoples and their fundamental connection to ecosystems" (NFSC 2003:14). The Strategy recognizes that in order to support more effective aboriginal participation in forestry, forest management planning and decision-making processes need to include Aboriginal cultural and traditional approaches to land use (NFSC 2003). Similarly, the Criteria and Indicators document developed by the Canadian Council of Forest Ministers, entitled "Defining Sustainable Forest Management in Canada – Criteria and Indicators 2003" recognizes the importance of aboriginal traditional land use and forest-based ecological knowledge, and the necessity of using this knowledge in forest management planning (CCFM 2003).

Canada is also a signatory to international agreements that highlight the importance of incorporating traditional values and knowledge into aboriginal forestry. For example, the Convention on Biological Diversity recognizes the role of indigenous and traditional knowledge in the maintenance of biodiversity (UNCED 1992a). Another agreement signed by Canada, the United Nations Conference on Environment and Development (UNCED) – Statement of Forest Principles, suggests that national forest policies should recognize and support the identity, culture and the rights of indigenous people and that:

> 12. (d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support and in collaboration with the people in the local communities concerned, be recognized, respected, recorded, developed and, as appropriate, introduced in the implementation of programs ... (UNCED 1992b)

Although policy commitments exist at the federal level that recognize the importance of integrating traditional values into aboriginal forestry, the federal government has limited jurisdiction over forest resources in Canada. Over 70% of Canada's forests are on Crown lands that fall under the jurisdiction of provincial governments (NRC 2002). In British Columbia, the provincial government has made limited progress implementing federal commitments regarding aboriginal forestry or developing suitable collaborative frameworks that incorporate aboriginal values into forest management and planning (Karjala & Dewhurst 2003). In BC, participation by First Nations in the provincial tenure system is not consistent with many of the objectives for aboriginal forestry as described in federal commitments (Ross & Smith 2002). Ross and Smith (2002:5) articulate their concerns:

> Aboriginal Peoples are expected to operate within the framework of the existing industrial tenure and forest management systems. With very few exceptions, the fundamental tenets of forest policies and the tenure system have not been modified to accommodate the particular values, needs and knowledge systems of Aboriginal Peoples. By drawing Aboriginal Peoples into the industrial tenure system and compelling them to operate according to industrial management practices which are incompatible with their values and culture, governments contribute to creating internal tensions and crises in many Aboriginal communities.

Although the provincial tenure system may not adequately support aboriginal forestry that is consistent with the commitments made at the federal level, some interesting work has been accomplished in BC that advances the priorities articulated by the federal government. For example, the Clayoquot Sound Scientific Panel developed a comprehensive framework for forest practices standards that sought to achieve the inclusion of traditional ecological knowledge and interests of indigenous peoples in sustainable ecosystem management for Clayoquot Sound, on the west coast of Vancouver Island (CSSP 1995b). While the framework created by the Scientific Panel is useful as a

model for others to consider, the applicability of the framework is constrained both ecologically (applicable to coastal temperate rainforests) and politically. For instance, in order to implement the Scientific Panel's recommendations, the Chief Forester decreased the Allowable Annual Cut (AAC) in the Clayoquot Sound area by 62% (Ross & Smith 2002). From a political perspective, an AAC reduction of this magnitude is unlikely to occur in other areas of the province.

Other innovative approaches to aboriginal forestry that specifically incorporate traditional values and are therefore more consistent with federal objectives can be found at the level of work being accomplished by individual First Nations throughout British Columbia. For example, the Gitxsan who live in northwestern BC east of Prince Rupert have developed an ecosystem-based planning model that combines aboriginal knowledge and values with up-to-date scientific information and technology (Collier & Rose 2004). The Gitxsan model involves mapping where and how logging or other activities may take place within the territory based on the ecological and cultural requirements for long-term sustainability. The Gitsxan intend to implement the model when they prove aboriginal title to their land and hold significant legal authority over Gitsxan territory (Collier & Rose 2004). Another example is the Squamish Nation, located in southwestern BC, who developed a draft land use plan in 2001 entitled "Xay Temixw" (Sacred Lands). The premise of the land use plan is to integrate the values that are important to community members such as having secluded places for cultural practices, habitat for wildlife, productive fish streams, clean air and water, resources to earn a living, and places to heal and connect with nature (Squamish Nation 2001). The draft plan identifies four land use zones (forest stewardship zones, sensitive areas, restoration areas, and wild spirit places) throughout the territory. Each land use zone is associated with a set of management objectives and strategies based on community values and perspectives. In addition, the land use plan document provides proposed revised policy and regulatory processes that would assist in the implementation of the land use plan (Squamish Nation 2001). Similar to the Gitsxan model, the Squamish Land Use Plan was developed outside of provincial land use planning processes and therefore has limited potential in the short-term to influence aboriginal forestry that incorporates traditional values within the provincial system.

An example of a provincially condoned process where First Nations are being provided the opportunity to integrate aboriginal values into land use and forest management planning is at the coastal land-use planning tables (Central Coast, North Coast, and Haida Gwaii). These three planning tables are unique in the history of land use planning in BC, which has often been characterized by the absence of First Nations participation in the development of previous provincial land use plans (Wilson et al.1996). At the coastal planning tables, the provincial government is supporting First Nations communities in the development of their own visions for land use, which will in turn shape the final outcomes of provincial land-use plans (MSRM 2002). Coastal First Nations are engaged on a government-to-government level in these particular land use planning processes, which involves co-chairing of processes, representation at decision-making forums, and participation on technical process support teams (MSRM 2002). Although the work being accomplished on BC's coast is exciting and may result in innovative and new approaches to forest management that meaningfully integrate aboriginal traditional values, this process is an exception, not the rule, for aboriginal communities pursuing forestry in BC. For most BC First Nations, suitable frameworks for integrating aboriginal values into forest management that are endorsed by the provincial government are generally not available (Pearse 1994, Ross & Smith 2002, Karjala & Dewhurst 2003).

3.1.3 Options for involvement

In the previous section I discussed the commitments that have been made federally regarding aboriginal forestry and examples of First Nations within British Columbia pursuing aboriginal forestry or other land use planning initiatives with the intent of incorporating traditional values into their approaches. In this section, I will describe a number of options that are available for First Nations to gain access to forest resources and/or pursue forest management within British Columbia.

As a result of the evolving recognition that First Nations have rights to both their lands and the associated resources, opportunities for access and involvement in forest management are increasing for First Nations communities (Treseder & Krogman 1999, Boyd 2003). In British Columbia, while the vast majority of responsibility for forest

management rests with industry and the provincial government, First Nations interested in participating in forestry have a number of options. Details of six potential options are described below and in Table1.

On Reserve – First Nations have the ability to pursue forestry on Reserve lands. The regulatory framework for forestry on Reserve is provided by the *Indian Act* but does not address non-timber or ecosystem values (Cortex 1998, Ross & Smith 2002). As a result of the weak regulatory environment much Reserve land has historically been mismanaged, often by non-First Nations contractors operating on Band land (Notzke 1994). The size of individual Reserves is generally too small to support long-term and feasible forestry operations (Kinsella 1999, Parsons & Prest 2003). Although challenges exist, pursuing forestry on reserve land can provide opportunities to develop forestry related capacity within the community (Kinsella 1999) with possible funding from Indian Affairs (FNFP 2000).

Crown tenures – First Nations can become the "licensee" of a Crown tenure that allocates rights and responsibilities for the management of forest resources in a particular area (area-based tenure) or for a specific volume (volume-based tenure). A number of different types of tenure exist, however the dominant silviculture system associated with most tenures is clearcutting (Marchak et al. 1999, Statistics Canada 1999). The higher level planning that determines the amount and rate of harvest on various tenures does not generally take into consideration First Nation values, and often results in a cut that is too high to maintain ecosystem function or First Nations' traditional values in the long-term (Hopwood 2002, Ross & Smith 2002). Some First Nations who have become licensees have found it difficult to incorporate aboriginal rights and traditional values into the industrial forestry that is associated with the provincial tenure system (Ross & Smith 2002, Curran & M'Gonigle 1999, Booth 1998). Other First Nations are opposed to participating in the tenure system altogether as they regard the system as an institutionalized denial of aboriginal rights and title (Clogg 1999, Hopwood 2002). Some have argued that tenure reform must occur in order for the issue of aboriginal rights to be meaningfully resolved and for

aboriginal values to be effectively incorporated into forest practices (Walkem 1999, Ross & Smith 2002). Historically, it has been difficult for First Nations to gain access to provincial tenure because of the limited availability of tenures, limited forestry capacity within First Nations' communities, and lack of access to funds for large capital expenditures associated with running an industrial scale forestry operation (Brubacher 1998). More recently, in attempts to reconcile issues of aboriginal rights and title and to increase economic certainty within the province, policy changes at the provincial level have resulted in a number of First Nations receiving short-term area-based tenures (MoF 2003a). Although numerous constraints exist to First Nations participating in the tenure system, acquiring tenure can provide a degree of control over the management of resources within the traditional territory that a First Nation may not otherwise receive. If the forest operation is successful and market conditions are favourable, being a licensee of a Crown tenure may provide economic benefits to First Nations' communities (Treseder & Krogman 1999). Upcoming changes in British Columbia's forest policies and legislation will likely have both positive and negative impacts on First Nations ability to acquire and effectively manage Crown tenures (Clogg 2003).

Joint ventures – Joint ventures are partnership arrangements between First Nations and industry, which enable First Nations to establish forestry operations within the tenure system. Many of the same opportunities and challenges presented above in the Crown tenure section also apply to joint ventures. Participating in a joint venture can be advantageous to a First Nation's community because the industry partner generally provides the capital and capacity that First Nations may not otherwise have access to (Treseder & Krogman 1999). Joint ventures potentially present opportunities to First Nations for training, industry experience, and economic development (Curran & M'Gonigle 1999). Joint ventures are also increasingly viewed as an opportunity to build positive relationships between First Nations and industry (Graham 1999). The success and effectiveness of joint ventures rests largely on the content and quality of the agreement between partners. In the past, joint ventures were frequently

characterized by an unequal distribution of decision-making power with the non-aboriginal partner often taking advantage of the First Nation (Drushka et al. 1993). Presumably, as aboriginal communities gain more experience in forest management and partnership building, the prevalence of inequitable joint venture agreements will be minimized.

Treaty settlement lands – A number of First Nations throughout BC are currently engaged in the BC Treaty Process to negotiate modern day treaties with the provincial and federal governments. Treaty settlement lands (TSL), with fee simple ownership granted to the First Nation, will likely be a component of final treaties (BCTC 2002). TSL will likely provide long-term, secure, and exclusive access to resources and First Nations governments will likely be able to develop their own forest management laws and regulations on the condition that they are consistent with or exceed existing legislation (BCTC 2002). Challenges associated with forestry and TSL include that provincial treaty negotiations are premised on a model where First Nations receive fee simple ownership over a small portion of their territory in exchange for the extinguishment of aboriginal title over the extent of their traditional territory. In a post-treaty environment, First Nations will be limited in their ability to attend to landscape level issues on those lands where aboriginal title has been surrendered (Burda et al. 1999). The costs of negotiating treaties are extremely high and depending on how this issue is resolved, burdensome debt loads may offset revenues generated from forestry opportunities on TSL. Overall, the opportunities and challenges associated with pursuing forestry on TSL are largely unknown because no modern day treaties have yet been signed within the BC Treaty Process[9].

Co-management – The term co-management refers to situations where there is some combination of centralized, state-level management, and traditional, local-level resource management systems (Hawkes 1996). In a co-management arrangement the administration, planning, and management of natural resources

[9] Tripartite negotiations between the Nisga'a Tribal Council, provincial, and federal government resulted in the signing of the first modern day treaty in BC. Both the negotiations and the "Final Agreement" signed in 1998 occurred outside of the BCTC process and are not necessarily considered a prototype for the current negotiations facilitated by the BCTC (INAC 2002).

can be shared on a government-to-government level between multiple parties such as First Nations, provincial, and/or federal governments. Co-management agreements can cover varying amounts of land and have the potential to allow First Nations to retain aboriginal rights and title over significant portions of their traditional territories (Sherry & Myers 2002). By entering government-to-government relationships, First Nations have the ability to share in decision-making responsibilities and meaningfully incorporate aboriginal values into forest management (CSSP1995). Given that co-management agreements often involve a significant devolution of power to the First Nations, a major challenge associated with pursuing co-management agreements is the reluctance on behalf of the government to enter such arrangements. Concerns of the provincial government include losing jurisdiction over Crown lands and resources and setting precedents for other First Nations (Bombay1995). Co-management arrangements are often timely and costly to organize and execute, which is inconsistent with the current directives of many provincial agencies that prioritize expediency in decision making and economic efficiencies.

Direct action – First Nations can participate in forestry through direct action where aboriginal rights are asserted through participation in harvesting or use of resources without involvement in any formalized arrangements. Direct action can provide short-term access to forest resources and can be used as a tool to demonstrate the political will of the participating First Nation. However, direct action does not provide an opportunity to participate in the long-term planning or management of forests. Depending on the direct action taken, the possibility of legal consequences exist that can be costly in both human and financial resources.

See Table 1 below for a summary of the opportunities and challenges associated with each option.

Although the options are presented independently, they are not mutually exclusive. First Nations groups often pursue forest management using a combination of the aforementioned options to access forest resources as they gain additional authority over land management. The ability and interest of First Nations to pursue any or all of these options is influenced by factors shaping the relationship between the community

and their land-base both pre-contact and during the last two centuries. As access to forest resources expands, the question, "what tools are available to guide forest management and planning for First Nations communities?" is becoming increasingly important.

Today, aboriginal communities operate within the modern economy and have many of the same needs and desires as non-aboriginal people in terms of accruing wealth and participating in the market economy (Booth 1998). Combined with the interest and need to participate in the market economy is a desire to maintain or revitalize the knowledge and application of traditional values (Parsons & Prest 2003). The objective of many First Nations is not simply to achieve economic development at all costs, rather they wish to gain and exercise control over forest lands in such a way that the development of forest resources conforms to their own values and knowledge systems and is not only economically but also ecologically and culturally sustainable (Ross & Smith 2002). Aboriginal peoples face the challenge of balancing environmental stewardship with requirements for economic security, and reconciling traditional values with resource extraction (Booth 1998, Doyle-Bedwell & Cohen 2000).

Incorporating traditional values into a modern forestry context is a complex issue that deserves attention in both theory and practice. The relevant question then becomes "what tools are available to First Nations communities interested in incorporating traditional values into forest management and planning?" A number of authors propose that ecosystem-based management may be a useful tool or approach for First Nations pursuing aboriginal forestry with the express purpose of effectively integrating traditional, social, ecological, and economic objectives into forest management and planning. (CSSP 1995a, Booth 1998, Trosper 1998, Berkes 1999, Burda et al. 1999, Curran & M'Gonigle 1999, Lertzman 1999, Turner et al. 2000). In order to explore this issue, my research focuses on the specific case of Cowichan Tribes and the opportunities, challenges, and options associated with using ecosystem-based management as a tool for aboriginal forestry. Before discussing the conceptualization of ecosystem-based management that will be used in this paper, I will first provide more information about Cowichan Tribes historic and current relationship with the forest that informs their approach to aboriginal forestry.

Table 1. Options for First Nations involvement in forestry.

Option	Opportunity	Challenge
On Reserve	• on Reserve forestry can form foundation for building technical capacity and developing on and off Reserve business partnerships (Kinsella 1999) • communities can access funding to develop capacity for on Reserve forest development (FNFP 2000) • often only lands available to aboriginal communities for practicing forest management (Parsons & Prest 2003)	• forest lands on many Reserves generally too small to support long-term economically viable forestry operations (Kinsella 1999, Parsons & Prest 2003) • much of Reserve land has been mismanaged over several decades, often by non-aboriginal contractors, and forestry operations may not be feasible without significant restoration efforts (Notzke 1994) • regulatory framework governing forestry on Reserve through *Indian Act* only focused on timber and does not address ecosystem or non-forest values (Cortex 1998)
Crown Tenures	• provides opportunity to participate in provincial tenure system that First Nations have historically been excluded from • provides some degree of control over management of resources within traditional territory • may enable economic benefits to flow to the First Nations community (Treseder & Krogman 1999) • may provide training and employment to community members • area-based volumes may provide more flexibility over type of management pursued compared to volume-based tenures • changing forestry legislation regarding cut control may provide more flexibility for pursuing management options other than those associated with modern industrial forestry (Clogg 2003)	• gaining access to tenure generally requires specialized capacity within First Nation that is not always available (Brubacher 1998) • most tenures operate on a large industrial scale that involves large capital expenditures that First Nations may not have access to (Brubacher 1998) • volume based tenures often necessitate modern industrial forestry where dominant silvilcultural system is clearcutting (Marchak et al. 1999, Statistics Canada 1999) • challenge to incorporate aboriginal rights and traditional values into modern industrial forestry (Curran & M'Gonigle 1999, Booth 1998) • ideological struggle because some view provincial tenure system as an institutionalized denial of aboriginal rights and title (Clogg 2001, Hopwood 2002) • higher level processes (AAC determination and timber supply analyses) that determine the volume to be harvested within landscape level units do not adequately incorporate First Nations' values (Hopwood 2002) • often economic viability of forestry operations limited due to low timber prices, high stumpage, and export tariffs and taxes

Option	Opportunity	Challenge
Joint Ventures	• joint ventures generally involve a First Nation and an existing company jointly managing a Crown tenure, therefore many of the opportunities are the same as presented above in "crown tenures" • enable First Nations to access land and capital required to establish forestry operations that they would not be able to secure without partnership (Treseder & Krogman 1999) • can be important step in relationship building between First Nation and industry operating within traditional territory (Graham 1999) • participating in joint ventures includes training, industry experience and economic development that accompanies the venture (Curran & M'Gonigle 1999)	• joint ventures generally involve a First Nation and an existing company jointly managing a crown tenure, therefore many of the challenges are the same as presented above in "crown tenures" • can be characterized by unequal distribution of power in decision-making and non-aboriginal partner may take advantage of the First Nation (Drushka et al. 1993)
Treaty Settlement Lands	• opportunities largely unknown because only one modern day treaty signed in BC (Nisga'a Lisims Government) • may provide opportunities to develop laws and regulations for forest management that are consistent with or exceed existing forestry legislation • may provide long-term, secure, and exclusive access to resources on treaty settlement lands • may provide opportunity to participate in long-term planning on treaty settlement lands directed by the First Nation	• challenges largely unknown because only one modern day treaty signed in BC (Nisga'a Lisims Government) • provincial treaty negotiations based on "land selection model" predicated on extinguishment of title over majority of traditional territory in exchange for secure title over smaller portion of territory– ability to inform forest management would likely only reside within treaty settlement land and would preclude attending to landscape level issues (Burda et al. 1999) • costs associated with negotiating a treaty are extremely high and therefore may offset revenues generated through forestry opportunities that arise as a result of treaty settlement
Co-Management	• First Nation can retain rights and title over larger extent of their traditional territory • opportunity to incorporate aboriginal knowledge, values, and decision-making capabilities in resource management processes (CSSP 1995b) • opportunity to create government to government relationships between First Nations, federal and/or provincial governments	• governments are reluctant to develop co-management arrangements with FN participation because they fear losing jurisdiction over Crown lands and resources, and are concerned with setting precedence (Bombay 1995) • may not be aligned with current provincial objectives associated with expediency in decision making and economic efficiencies because co-management arrangements are often costly and timely for governments • distribution of power among parties in co-management

Option	Opportunity	Challenge
		agreement can be uneven leading to inequities in decision-making processes
Direct Action	• opportunity to assert aboriginal rights • secures short term access to resources • opportunity to demonstrate political will of the participating aboriginal communities • may draw positive media attention to the issue of First Nations access to resources	• limited opportunity for long term planning • limited opportunity for capacity building • may involve court challenges that are costly in both human and financial resources • may draw negative media attention to the issue of First Nations access to resources

3.1.4 Cowichan Tribes

Aboriginal forestry is not represented by a particular approach to forestry because the needs, values, and experiences of First Nations peoples are diverse and consequently so are their approaches to forestry. In this research project, Cowichan Tribes is used as a case study for aboriginal forestry. In this section, I will describe Cowichan Tribes relationship with the forest and their involvement in forest management and planning over time.

Significant changes to the Cowichan landscape, altering Cowichan peoples' relationship with the forest, were initiated with the arrival of European people on BC's coast in the mid-1800s (Marshall 1999). In the 1860s, the colonial government imposed their land settlement policies taking possession of Cowichan lands and relocating Cowichan people to Indian Reserves. No treaties were signed by Cowichan Tribes, title to the land was not surrendered, and no compensation was paid for the land taken by the Crown (Marshall 1999). Cowichan people were allocated approximately 2,300 hectares of Reserve land (INAC 2003); less than 1% of the approximately 330,000 hectares that formed their traditional territory (HTG 2003).

Cowichan people recognized the Crown's illegal assertion of title to the land and resources within their traditional territory, and attempted to resist the forces of colonization (Dyck 2000). Early forms of resistance included lack of cooperation with the surveyors by continually removing their stakes as an assertion of title (Marshall 1999). Later, resistance took the form of political protest when the Cowichan petitioned governments and sent official delegations to meet with provincial, federal and Royal representatives (Marshall 1999). For example, the Chief of Cowichan (with chiefs from the Squamish and Bonaparte Tribes) traveled to England on behalf of all First Nations in British Columbia in order to address King Edward VII. The chiefs presented a petition suggesting that the king take action in demanding a settlement for their grievances in the Dominion of Canada. These efforts did not result in any significant changes in BC.

Accompanying the shifting "ownership" of the land within Cowichan territory, was a corresponding rise in resource development and extraction. For more than 100 years, the Cowichan Valley and surrounding areas have been the focus of industrial

forestry operations that have contributed significantly to the local economy. Since the turn of the 19th century, a similar pattern of resource development has emerged throughout the province with forestry often dominating the landscape and fuelling the modern provincial economy. In the early history of BC's forest industry, logging camps and mills were isolated and labour was scarce, therefore the industry depended on local First Nations labourers. As non-aboriginal communities became established with the development of the province's "hinterland", aboriginal people were displaced from the industry (TFNF 1991). Consequently, aboriginal people of BC have not historically received an equitable share of the benefits derived from the forest economy in the province (BCFS 1994). Overall, Cowichan people have not benefited economically from the extraction of forest resources throughout their unceded traditional territory. In addition, forest harvesting has been to the detriment of the cultural and spiritual well being of the Cowichan community. Forest development in Cowichan Tribes' traditional territory has limited the quantity and quality of culturally important items found in the forest and has cause irreversible harm to many sacred areas (Neary 2001). Since the 1860s, Cowichan people have been prevented from practicing many of their traditional activities due to the effects of settlement and forest development and have not received significant economic benefits from the forestry development that has occurred.

Despite the many obstacles faced by Cowichan people in recent history, the tenacity of the community has lead to a continued, albeit modified, participation in traditional activities on the land-base. Cowichan people hunt, fish, gather food and medicine, and use the forest for cultural and spiritual activities. In addition to participating in traditional activities, Cowichan people also wish to pursue forestry in a modern context. Control over land is critical to realizing this pursuit. Cowichan Tribes have a strong interest in re-establishing the relationship and regaining control over both the land and the resources within their traditional territory (Blackwell et al. 2001).

Multiple factors affect Cowichan Tribes' ability to directly manage and/or influence the management of forested lands throughout the traditional territory. The predominant factor is the unique land tenure arrangements that characterize southeastern Vancouver Island. Figure 2 illustrates the land tenure arrangements within Cowichan Tribes' traditional territory.

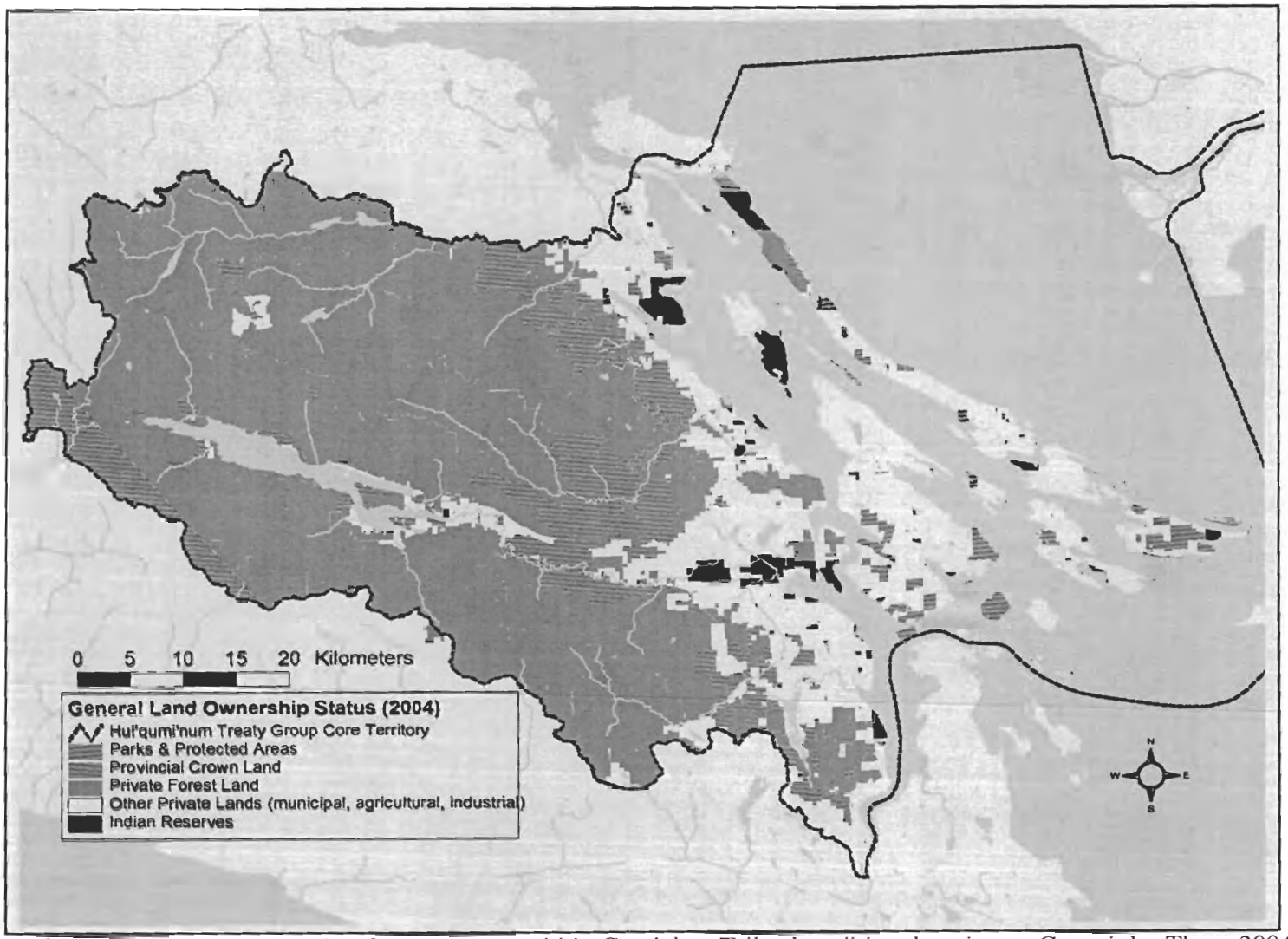

Figure 2. Land status map showing forest tenures within Cowichan Tribes' traditional territory. Copyright, Thom 2004, reprinted by permission.

Differing from the vast majority of other First Nations' territories throughout BC, the majority of lands (83%) within Cowichan Tribes' traditional territory are held privately, as opposed to most of the province where 95% of the land is Crown land (HTG 2003). The high concentration of private land on southeastern Vancouver Island is the result of an 800,000 hectare land grant given to the Esquimalt and Nanaimo (E&N) Railway Company in 1886 from the provincial government. Much of this highly productive forested land was subsequently sold to major logging companies (Parfitt 2001). Currently, TimberWest and Weyerhaeuser (two major forest companies), by virtue of the E&N Land Grant, hold most of the land within the traditional territory in fee simple private ownership.

The laws that regulate forestry on private land are limited and have proven largely ineffective in protecting many traditional and environmental values (Cashore et al. 2001). Legislation such as the *Forest Practices Code Act* (recently replaced by the *Forest Range and Practices Act*) only applies on Crown lands in the province of British Columbia. Intensive logging on private lands, as a result of the weak regulatory environment[10], has had a significant impact on a variety of resources and values on southeastern Vancouver Island (Parfitt 2001). The forest management practices that characterize private forest lands have had an effect on Cowichan Tribes by degrading the integrity of the forested ecosystems that Cowichan people have and continue to depend on for cultural, spiritual, and subsistence needs. In addition, Cowichan Tribes ability to influence and participate in land use decisions on these privately held forest lands is limited. For the most part, forest management and planning on private forest lands does not occur in consultation with Cowichan Tribes[11], in contrast to activities that occur on Crown lands, which must proceed in consultation with First Nations. Private landholders are under limited legal obligation (to date) to accommodate aboriginal interests on the lands that they hold in fee simple ownership.

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[10] Some private forest landholders argue that the less cumbersome regulatory environment allows for more flexibility in forest management practices, which creates options for innovation and experimentation that promote better and more ecologically sensitive approaches to forest management.

[11] Some issues provide an exception and companies with private forest holdings are obligated to consult with a First Nation. One example is Pest Management Plans (regulated by the *Pesticide Control Act* under the authorization of Ministry of Water, Air, and Land Protection) that must be referred to First Nations. The Crown is obliged to ensure that aboriginal interests are not unjustifiably infringed by authorizing a Pest Management Plan on private forest lands.

Of the remaining non-privately held forest land in Cowichan Tribes' traditional territory, 14% is Crown land, 2% is parks, and 1% is Indian Reserve (HTG 2003). Cowichan Tribes has some influence over the small amount of Crown land that exists within the traditional territory through the provincial consultation process. Due to a number of influential court cases, the provincial government is required to consult with First Nations regarding the development of Crown lands within BC in attempts to reconcile aboriginal and non-aboriginal interests (BC 2002:2). The Ministry of Forests, among other provincial ministries and agencies, has developed specific policies stating their own position on consultation:

> To address legal obligations, forest development decisions will be the subject of consultation efforts between First Nations and government. An appropriate consultation process should be employed for each type of decision under the Ministry's mandate that is capable of affecting aboriginal interests. The scope of consultation will depend on the degree to which the forestry decision impacts the landbase; and the degree to which the First Nation likely has aboriginal interests within the area under decision. (MoF 2003c:1)

A number of recent court decisions have created an obligation for the province to broaden the consultation that occurs with First Nations regarding the impacts of Crown land development on aboriginal interests (Hunter 2000). Although the issue of accommodating aboriginal interests is evolving, many First Nations are not satisfied with the effectiveness of the provincial consultation process and feel that their concerns related to rights and title are not adequately addressed through consultation (Walkem 1999, Lindsay & Smith 2001, Flahr 2002, Collier & Rose 2004). Due to the dissatisfaction with the existing consultation process, First Nations with sufficient resources often pursue litigation in hopes that the courts will ensure their aboriginal interests are meaningfully accommodated.

The lack of Crown land within Cowichan Tribes' traditional territory combined with the ineffectiveness of the provincial consultation process limits Cowichan Tribes ability to influence forest management and planning in order to ensure that their aboriginal interests are accommodated on the land. Cowichan Tribes never authorized the sale or granting of the E&N lands and they did not receive payment or any compensation for the alienation of these lands (HTG 2003). Land tenure arrangements

have far-reaching implications for the degree to which Cowichan Tribes' aboriginal rights and title are incorporated on the land base.

In efforts to reconcile the outstanding issues of aboriginal rights and title, Cowichan Tribes have been participating in the British Columbia Treaty Process since 1993 (BCTC 1993). Cowichan Tribes are a member of the larger Hulq'umi'num Treaty Group (HTG) that represents six Bands and negotiates with the governments of BC and Canada. HTG is in stage four of the treaty process and is currently developing an Agreement in Principle (HTG 2003). Although it is difficult to ascertain whether or not a treaty will be settled and, if so, within what timeframe, several important forest-related outcomes have been achieved through involvement in treaty negotiations to date. Negotiations, through the signing of Interim Measures Agreements (IMA) and Treaty Related Measures (TRM), have resulted in:

- funding for a forestry study to identify the economic potential of lands under consideration for treaty negotiations;
- protection of a 1,700 hectare culturally and spiritually significant area known as Hw'te Shutsun;
- financial contribution from the Canadian and provincial governments to help support Cowichan Tribes' participation in the forest industry;
- awarding of a 2,000 cubic-metre tenure for the purpose of providing forestry training for Cowichan Tribes' members; and,
- invitation to submit a proposal for a community forest pilot agreement of 10,000 cubic-metres/year.

The purpose of the TRM and IMA are to establish a Cowichan forest land-base and related capacity funding to support Cowichan forestry economic development (Blackwell et al. 2001). Continued participation in treaty negotiations may result in acquisition of treaty settlement lands, increasing the availability of areas to pursue forestry. Other options that Cowichan Tribes are pursuing to secure increased access and management of forest resources include potentially developing joint venture arrangements with local forest companies, and negotiating with the province in order to secure tenure through the governments recent "Forest Revitalization Plan". Cowichan Tribes regard involvement in the forest sector as a way to engage in economic development activities, generate

employment for community members, and assert aboriginal rights and title through the management of Cowichan Tribes' traditional lands. Cowichan Tribes identified the need to develop relevant policies and strategies to guide forest management and planning as they become increasingly involved in the forest sector. The community survey and forest policy, which are evaluated as part of this research project, are one component of Cowichan Tribes' efforts to build their capacity to play an increased and effective role in forestry.

Cowichan Tribes are attempting to gain increased access to land and resources through a number of mechanisms. In the interim, the land-base on which Cowichan Tribes currently have the ability to pursue forestry is limited to Reserve land. Forestry on Reserve is authorized by the Ministry of Indian and Northern Affairs and regulated through the *Indian Act* (Notzke 1994). The amount of land available for pursuing forest management is constrained by other incompatible land uses. For example, much of Cowichan Tribes' Reserve lands are used for residential purposes and leased to non-Cowichan people for commercial and agricultural uses. Remaining areas on Reserve that are available for forest development fall into two categories, Band land and Certificate of Possession Land. The two categories differ in that Band land is Reserve land held communally by the Band and CP land is Reserve land held individually by specific Band members[12]. Although forest development on Reserve is regulated through the *Indian Act* and logging permits are only issued by means of a Band Council Resolution, Chief and Council cannot veto a particular use of CP held land because they disagree with the landholders plans for it (INAC 2002b). The combination of CP land and Band land creates a potential barrier to cohesive land use planning if the various "owners" cannot agree upon a strategy regarding the overall development of Reserve land.

Although the relationship between Cowichan people and the forest has been altered over time, Cowichan Tribes are now making active attempts to become increasingly involved in land management and forestry. One example of an effort being pursued to assist in regaining control over both their land and resources within the

[12] The concept of CP lands (formerly known as location tickets) originated from the first consolidated *Indian Act* in which locations tickets, which granted exclusive rights of occupancy and possession of particular plots of reserve land, were encouraged as a means of introducing European concepts of individual property ownership and encouraging assimilation (INAC 2002b).

traditional territory includes the development of a forest policy. Cowichan Tribes' forest policy is intended to guide forest management and planning throughout the traditional territory. The approach adopted in the forest policy will form the basis of the discussion on the usefulness of ecosystem-based management as a tool for Cowichan Tribes.

3.2 Ecosystem-based Management

In order to more fully understand the usefulness of ecosystem-based management as a tool for aboriginal forestry, we must first consider what constitutes ecosystem-based management.

3.2.1 Introduction

Complicating the discussion of EBM is the fact that two terms, ecosystem-based management and ecosystem management, are often used interchangeably. The term *ecosystem management* is commonly associated with the policies instituted by the U.S. Forest Service and other U.S. agencies over the last decade (Cortner & Moote 1999). The concept of ecosystem management evolved, in part, from work in the Pacific Northwest during the early 1990's. At the time, federal political direction resulted in the development of a comprehensive ecosystem management strategy to address the controversial issue of northern spotted owl habitat and old growth forests on federal lands (FEMAT 1993). As with many terms that become entrenched in politics and government policy, meanings shift and often become co-opted. Authors such as Stanley (1994) describe ecosystem management as practiced by US federal land management agencies, as an anthropocentric approach to management with the implicit belief that humans can continue to manipulate and manage ecosystems to satisfy human needs and desires while protecting ecosystem integrity. The term ecosystem management infers that humans have the ability to manage ecosystems; this inference is anthropocentric and advances the "humans dominating nature" paradigm.

In contrast, the term *ecosystem-based management* implies a more biocentric approach, where protecting ecosystem integrity takes priority over human use. In

ecosystem-based management, management is based on ecosystem principles and there is recognition that humans need "managing" not ecosystems.

The two terms are used by some people to differentiate the management that is being implemented by resource management agencies in the US (ecosystem management) from the ecosystem-based management that is an evolving concept being studied and practiced in a Canadian context. For example, the provincial land use planning process that is currently underway on BC's Central Coast is advocating an ecosystem-based management approach (MSRM 2001a). According to materials produced by the Central Coast planning table, ecosystem-based management has two broad goals of 1) maintaining ecological integrity and 2) achieving high levels of human well-being. In this case, ecological integrity defines the over-arching context for achieving high levels of human well being, implying a commitment to sustainable and cautious resource use (CIT 2003). Slocombe (1998a), a Canadian academic, defines ecosystem-based management as the deliberate management of an entire regional ecosystem with the intention of maintaining ecological integrity. The focus on whole ecosystems and on the development of integrative and multidisciplinary processes for planning and management differentiates ecosystem-based management from the dominant conception of ecosystem management, which is often conducted at smaller spatial scales and is more strictly the domain of ecological science (Slocombe 1998a). In many ways, ecosystem-based management derives both conceptually and practically from ecosystem approaches such as ecosystem management (Slocombe 1998a).

In this research paper I will refer to the concept of ecosystem-based management (EBM), but will draw from authors that have contributed to both the ecosystem management and ecosystem-based management literature. The purpose of this section of the research paper is to establish a conceptualization of EBM in order to discuss its applicability and usefulness to aboriginal forestry. Rather than canvassing the range of existing interpretations of the two concepts, ecosystem management and ecosystem-based management, I will highlight general themes of the concepts and use the themes as a point of departure for the discussion. My choice to use the term ecosystem-based management is a result of my understanding that EBM is an evolving concept that has roots in ecosystem management, but has broadened conceptually and become the term

associated with innovate forest planning and management in British Columbia. In addition, the ecological integrity focus of ecosystem-based management seems a more appropriate point of departure for a discussion of aboriginal forestry, which is described as often being more biocentric than other current models of forest management (Parsons & Prest 2003).

Rigg's (2001) comprehensive review of ecosystem management builds on previous analyses provided by authors such as Grumbine (1997) and Yaffee (1999). Rigg's work conveniently distills a very large body of literature into four main themes emerging from academic, government, and industry sources. The four themes serve as a manageable analytical framework to guide the discussion of aboriginal forestry and EBM in the context of Cowichan Tribes for my research paper. Also, Rigg emphasizes ecological integrity and therefore her themes fit well with the EBM concept. By using these four themes to explore the topic of EBM, I do not intend to suggest that the themes should be used to exclusively define EBM nor should the themes necessarily be weighted equally in terms of their importance as characteristics of EBM. I will expand on some of the substantive issues addressed in the literature using a slightly modified version of the four themes presented by Rigg[13] (2001). The themes are:

- ecological integrity;
- adaptive management;
- cooperation and collaboration; and,
- integration of social values.

Figure 3 illustrates the four themes of EBM with ecological integrity as the over-arching theme.

[13] Rigg (2001) identifies four dominant themes of ecosystem management: 1) ecological and integrated systems management, 2) adaptive scientific management, 3) cooperation and collaboration, and 4) integrating social values. For the purpose of my analysis I have modified the titles of the first two categories – changed to 1) ecological integrity and 2) adaptive management – to enable a broader and more accessible discussion of the issues.

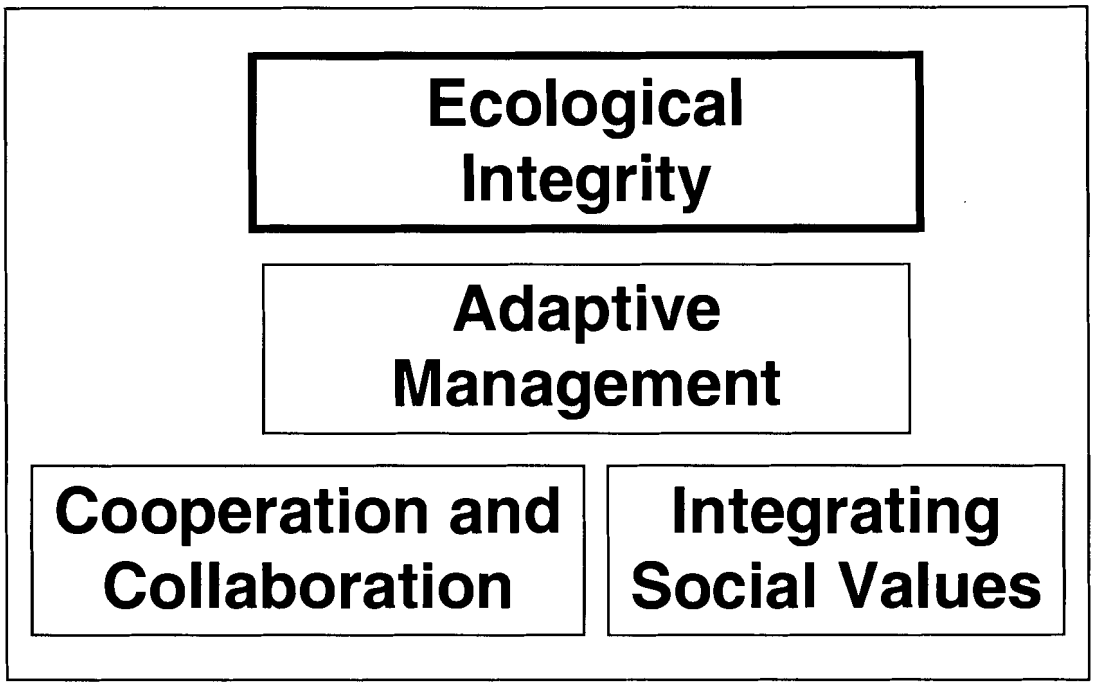

Figure 3. Four themes of ecosystem-based management.

EBM is a relatively new approach to resource management (Slocombe 1998b). In the context of forest management and planning, EBM attempts to provide an alternative to previous management paradigms that were largely focused on commodity production and economic returns (Grumbine 1994, Brunner & Clark 1997). The rise of EBM has occurred in the context of developments in the scientific understanding of forest ecosystems leading to the need for different management practices (Yaffee et al.1996, Kohm & Franklin 1997). EBM has also become popularized in the context of changing social values where the public at large are beginning to demand that management practices maintain the integrity of forest ecosystems for the benefit of humans and other species over time (Beckley 1998, Cortner & Moote 1999, Yaffee 1999). While increased attention is being focused on EBM, widespread agreement on the meaning and practical applications of the term have not been achieved (Stanley 1995, Cortner *et al.* 1996, Yaffee 1999). The lack of agreement over what EBM means, both theoretically and operationally, is considered both a strength (Roe 1996, Brunner & Clark 1997) and a weakness (Cawley & Freemuth 1992, Keiter 1996) of the approach.

3.2.2 Ecological Integrity

Maintenance of ecological integrity is often regarded as the central tenet of EBM (Grumbine 1994, Brunner & Clark 1997, Grumbine 1997, Lertzman et al. 1997, BC Parks Legacy Panel 1999, Drever 2000, Holt 2001, CIT 2003). The ecological focus of EBM indicates a shift away from previous forest management paradigms where commodity production, and particularly the production of a single commodity, has typically been the predominant theme. With an emphasis on ecological integrity, forest practices in EBM are intended to maintain ecosystem processes that allow the land, water, and air to sustain life, productivity, and the capacity to adapt to change (CSSP 1995b). Sustaining ecological integrity involves maintaining viable populations of native species and representing native ecosystem types across their natural range of variation in space and time (Grumbine 1994, Lertzman et al. 1997, Swanson et al.1997). Understanding the history and natural range of variation of specific ecosystems is therefore integral to maintaining and protecting ecological integrity (Landres et al. 1999). Sufficient scientific knowledge and understanding of ecosystem components and processes is necessary to develop and implement EBM practices. Advances in ecosystem sciences as well as continued commitments to research in this field should help to achieve the protection and maintenance of ecological integrity (Kohm & Franklin 1997).

A challenge associated with shifting the focus to ecological integrity includes obtaining sufficient ecological information to develop and implement forest practices that meet the goals of sustaining ecosystem life, productivity, and resilience (Meyer & Swank 1996). The time, money, and effort necessary to generate or compile the ecological information necessary for EBM often results in a perceived delay in progress that creates frustration among participants (Yaffee et al. 1996, Rigg 2001). Advances in ecological understanding are considered by some to be the paramount issue necessary for the success of EBM (Meyer & Swank 1996). However, others feel that focusing on ecological integrity and amassing sufficient scientific data should not prevent the forward momentum of EBM, and that the best way to learn about EBM is through practical experience in the field (Brunner & Clark 1997). Another challenge associated with an emphasis on ecological integrity is that management practices aimed at protecting ecosystems for the long-term generally necessitate decreased levels of resource extraction

in the short-term. Adjustments in the level of short-term exploitation have a corresponding effect on the short-term economic benefits. Some of the financial profits associated with resource extraction in the short-term are often not achievable within an EBM framework (Yaffee 1996).

Related to the focus on ecological integrity in EBM is the understanding that ecosystems are a result of a multitude of complex interactions. In order to understand EBM, it is necessary to consider forest ecosystems in the broadest sense – spatially, temporally, and philosophically. When forests are placed in the larger context of physical and social landscapes, the need to understand the intricate and multiple connections between variables becomes pronounced. Such consideration can be referred to as systems thinking. Systems thinking, focussing on the interconnections between a complex set of variables, ecological and social, taking place over time and space, is central to EBM (Yaffee 1996). Systems thinking promotes a holistic approach where forests are managed for wholeness rather than for the efficiency of individual components (Kohm & Franklin 1997). While a holistic approach is more desirable from many perspectives, it is important to recognize that systems thinking is often incongruent with administrative, political, and personal behaviours that have developed in response to previous forest management paradigms (Grumbine 1997).

3.2.3 Adaptive Management

The complex and dynamic nature of ecological and social systems means that uncertainty, non-linearity, and unpredictability will always be inherent components of EBM. Adaptive management provides a framework for managing resources in an uncertain social and ecological environment (Bormann et al. 1994, Grumbine 1994, Cortner & Moote 1999). Adaptive management has been described as the "rigorous combination of management, research, and monitoring so that credible information is gained and management activities can be modified by experience; adaptive policy acknowledges institutional barriers to change and designs means to overcome them" (CSSP 1995b:271). In some interpretations of adaptive management, policies are designed as hypotheses and management is implemented as an experiment to test the

hypotheses (Holling 1996). Adaptive management has also been interpreted more loosely to imply a degree of flexibility that allows management objectives to change over time in response to additional information (Lessard 1998).

Critical to the implementation of adaptive strategies is the presence of effective monitoring programs that provide systematic feedback about whether on-the-ground practices meet outlined objectives (Kohm & Franklin 1997). For the potential of adaptive management to be realized, organizations, laws, policies, and management practices need to be flexible. Flexibility allows for rapid response and adaptation to information gathered through monitoring in terms of changes in ecological conditions, scientific data, available knowledge, social values, and community composition (Moote et al. 2001).

EBM adopts adaptive management as a strategy for dealing with the inevitable uncertainty presented by attempting to manage complex and dynamic systems which we do not fully understand. Adaptive management is a new and challenging component of forest management that is based on an ethic of humility, unlike many previous approaches to forest management (Kohm & Franklin 1997). One major challenge presented by an adaptive management approach is that budgeting processes often involve funding for one or two year project cycles and typically require results in the short-term to justify continued funding. In order to implement adaptive strategies, a commitment must be made to long-term planning and the aforementioned budgeting constraints make it difficult to implement adaptive programs that yield tangible benefits over the long-term (Yaffee et al. 1996). Another challenge involves the difficulties in accommodating new forms of knowledge and multiple sources of information necessary to achieve an adaptive framework (Moote et al. 2001, Rigg 2001). While challenges exist for the implementation of adaptive management strategies, it may be useful for the people involved in EBM to adopt the rationale described by Lee (1993:56): "Experiments often bring surprises, but if resource management is recognized as inherently uncertain, then surprises become opportunities to learn rather than failure to predict."

3.2.4 Cooperation and Collaboration

EBM is an approach to forest management and planning that involves broad stakeholder participation (Szaro et al. 1998). Collaborative efforts of people coming

together to create new solutions for managing resources is therefore a vital component of EBM. A collaborative approach to decision making supports public involvement by devolving the authority from the traditional "resource professional" decision makers to a wider and more representative stakeholder group (Yaffee & Wondoleck 2000). Collaborative designs can be powerful tools for resolving conflict, advancing a shared vision of how a resource should be managed, and invoking the public's sense of social responsibility to share in the stewardship of natural resources (Selin & Chavez 1995). In a broad review of EBM projects in the United States, collaboration, more than any other variable, was cited as critical to project success (Yaffee et al. 1996).

A potential challenge of collaborative models is that resource and environmental managers and other stakeholders must assume roles that are in direct contrast to those that they have traditionally held (Cortner et al. 2001). Resource managers, no longer the all-knowing experts, must now assume new roles as facilitators and be willing to engage in a learning process. This challenge is often met with reluctance. Managers need new skills to manage collaboration within a dynamic social and political environment, and to participate in decision-making processes necessary to sustain effective collaboration (Selin & Chavez 1995, Yaffee et al. 1996, Grumbine 1997, Cortner et al. 2001).

Collaborative models also necessitate public involvement in a manner often unfamiliar to the general public. The public at large has often been excluded from resource management decisions in the past. Moving towards collaborative models of decision-making must therefore involve processes of creating a more informed public to ensure that their involvement in forest management and planning is meaningful. This requires a populace willing to become informed and work with government or management agencies (Moote et al. 2001). Stakeholders must be open to learning from one another, acknowledge that learning is ongoing, and engage in learning that is inclusive and interactive (Daniels & Walker 1996, Moote et al. 2001). If institutions, resource professionals, and the public are going to participate meaningfully in EBM, then educational and training opportunities to promote learning are crucial (Phillips & Randolph 1998, Cortner et al. 2001).

Another challenge of collaborative approaches involves the difficulties of requiring diverse stakeholders with often conflicting interests to mold into a cohesive

decision-making group (Yaffee et al. 1996). The balance of power between various stakeholders is often uneven contributing further to the challenges of collaborative work (Grumbine 1997).

3.2.5 Integrating Social Values

The integration of social values actually characterizes all approaches to forest management, as the act of "managing" an ecosystem or a forest is in itself a social choice and therefore represents the integration of a set of social values and priorities (Lackey 1998, Cortner & Moote 1999). Modern industrial forestry has been driven by social values generally focused on economic and utilitarian uses of the forest (Grumbine 1994). EBM advocates the explicit integration of a wider set of social values generated by a broad cross-section of society (Cortner & Moote 1999). Determining social values is linked to collaborative decision-making processes that characterize EBM, where the interests of local stakeholders are integrated into forest management and planning. Through the explicit inclusion of a broader and more representative cross-section of social values into forest management and planning the hope is that EBM will result in better forest management practices and increased satisfaction and buy-in to management decisions (Yaffee and Wondoleck 2000).

More so than previous approaches, EBM recognizes that people and their values are part of the system to be managed (Lertzman et al. 1997); however, the extent to which social values should determine the outcomes of EBM is a subject of disagreement among scholars and practitioners (Yaffee 1999). Some scholars feel that goals and objectives to achieve ecological integrity over-ride all other social objectives (Grumbine 1994). This approach to EBM is premised on a philosophy that humans are reliant on functioning ecosystems, therefore the needs of the ecosystem must be met in order to, and possibly in advance of, meeting the needs of human (Stanley 1995, Grumbine 1997). Other scholars suggest that within an EBM framework, an ecosystem should be considered as much a socially constructed place as it is a scientifically delineated space, and cultural history should be afforded as much attention as natural history (Williams & Patterson 1996). The differing opinions on the degree to which social values should be integrated

correspond with various conceptualizations of EBM, which fall on a spectrum of anthropocentric to ecocentric (Lackey 1998, Yaffee 1999).

EBM is premised on the ability of society to recognize the interdependent relationships between humans and ecosystems (Moote et al. 2001). Challenges arise in the implementation of EBM because the philosophical underpinnings of combining social and ecological values run counter to deep rooted disciplinary, professional, and organizational divisions (Kohm & Franklin 1997). In addition, the mechanisms used to integrate social values are much less clear than those used to integrate ecological values (Rigg 2001). A further challenge for resource managers and decision-makers is to treat people as a rightful part of ecosystems and to integrate peoples' "sense of place" into EBM (Williams & Stewart 1998). Overall, a major shift in institutional approaches to forest management and the mindset of the public must occur if ecological and social values are to be successfully integrated into EBM.

3.2.6 Conclusion

Formidable challenges exist for the implementation of EBM. One of the most serious challenges is that the basic structure of many current institutions reflects a fundamentally different view of land, natural resources, and people than proposed under EBM, with its themes of wholism, dynamism, complexity, and uncertainty (Cortner et al. 1996). In order to address this challenge, all efforts should be accompanied by a concerted attempt to strengthen institutions and to build the capacity to sustain the development and actions of EBM (Moote et al. 2001). If we accept that forest ecosystems are inherently complex and uncertain, then we must anticipate that the process of designing and implementing EBM will mirror this uncertainty and complexity (Daniels & Walker 1996). While the challenges are numerous, a strong need and desire exists for a new paradigm to guide forest management – one that protects ecological integrity, incorporates a range of social values, addresses the fundamental disconnect between humans and nature, respects the complexity of forest ecosystems, and manages accordingly.

4 Results

4.1 Cowichan Tribes' Community Survey

In this section, I will present data from the community survey. The analyses of the results are both quantitative and qualitative. In the summer of 2001, the survey team interviewed 162 Cowichan community members in order to assess the needs and values of Cowichan members regarding forests and forest management. This section of the research paper is based on "Community Values: Informing Cowichan Tribes' Approach to Forestry – Report on Responses to Cowichan Tribes' Community Forest Survey" (Cowichan Tribes 2001) and the data associated with this report.

4.1.1 Forest Values

In order to help identify the most important values of the Cowichan people, participants in the community survey rated a number of forest values. The list of forest values was developed by Environment Department staff in consultation with community members through informal interviews. Participants were asked to rate each of the twelve forest-related values on a scale of 1 ("not important") to 5 ("very important"). Table 2 lists the forest values in descending order of importance, as reflected in the mean, for the entire sample, and also lists the standard deviation.

Overall, all values were deemed to be at least of some importance and received a mean rating of above 3.0 ("somewhat important"). However, there was a high level of agreement among all respondents that water quality, wildlife habitat, cultural use, hunting and fishing, spiritual use, old growth, and medicinal plants were all very important (all with means above 4.5). At the other end of the scale, the three values with the lowest means (under 4.0) were values relating to economic perspectives such as timber, tourism, and economic values from non-timber forest products. The variability in peoples rating

of importance is greater (indicated by a higher standard deviation) for the values that are considered less important (economic values from NTFPs, tourism, and economic values form timber) compared to the values considered more important (e.g. water quality, wildlife habitat, and cultural use) where the variability is very small.

Table 2. Evaluation of forest values by survey participants on a five-point scale (1=not important; 5=very important) in descending order of importance.

Forest Value	Mean	Standard Deviation	N
1. Water quality	4.94	0.31	162
2. Wildlife habitat	4.86	0.46	162
3. Cultural use	4.73	0.63	161
4. Hunting and fishing	4.67	0.69	162
5. Spiritual use	4.66	0.77	161
6. Old growth	4.62	0.83	156
7. Medicinal Plants	4.57	0.87	161
8. Food Gathering	4.43	0.91	161
9. Recreation	4.09	1.09	159
10. Economic values from NTFPs	3.43	1.24	159
11. Tourism	3.25	1.33	159
12. Economic Values from timber	3.03	1.34	159

After rating each value, survey participants ranked their top five values, which provided a similar pattern of evaluation. About 60% of the participants selected water quality, wildlife habitat, cultural use, hunting and fishing, and spiritual use in their top five. In contrast, less than 10% placed economic values from non-timber forest products, tourism, and economic values from timber in their top five.

I conducted a Principle Component Analysis (PCA) to explore the interrelationship between the various forest values (variables) and to determine if groupings of values (components) could be identified. PCA is an exploratory technique

that allows for the re-grouping of a larger set of variables into a set of components characterized by a combination of variables that may have a conceptual interpretation (Doherty 2003). The PCA used varimax rotation, components with eigenvalues of greater than 1 were retained, and the four components that were extracted explain 62% of the variance. The results, presented in Table 3, indicate that the forest values can be grouped into four components (PC 1-4). The table only includes loadings greater than 0.4, as they are considered most dominant in a component (Doherty 2003). In this case, I have interpreted the components by naming them so each reflects the forest values it represents. The four components are Traditional, Ecological, Economic, and Recreational.

Table 3. Principle Component Analysis of forest values with variable loadings greater than 0.4

	PC 1 Traditional	PC 2 Ecological	PC 3 Economic	PC 4 Recreational
Medicinal plants	0.77			
Cultural use	0.77			
Spiritual use	0.75			
Food gathering	0.72			
Hunting & fishing	0.53			
Water quality		0.77		
Old growth		0.77		
Wildlife habitat		0.63		
$ Timber value			0.86	
$ NTFP value			0.85	
Recreation				0.84
Tourism				0.60

In this analysis, the allocation of the forest values among the components is very decisive as there are no forest values overlapping each other in their allocation to individual components and each value relates well to the allocated concept.

Using the results of the PCA, I performed a Cluster Analysis to understand if different groups of participants responded in similar ways in their ratings of forest values. In this further step, the analysis ascribes component scores for each component to each respondent, and the Cluster Analysis searches for groupings (segments) among the

respondents. The advantage of performing a Cluster Analysis on the components instead of the original variables is that the components are independent of each other (not correlated). The Cluster Analysis (using Squared Euclidean Distance and the Ward Method in SPSS) produced one highly interpretable solution of five clusters. Each cluster represents a portion of the sample behaving distinctly from the others; Figure 4 illustrates how the mean ratings for the 12 original forest values differ between the five clusters (A-E), which differed drastically in size.

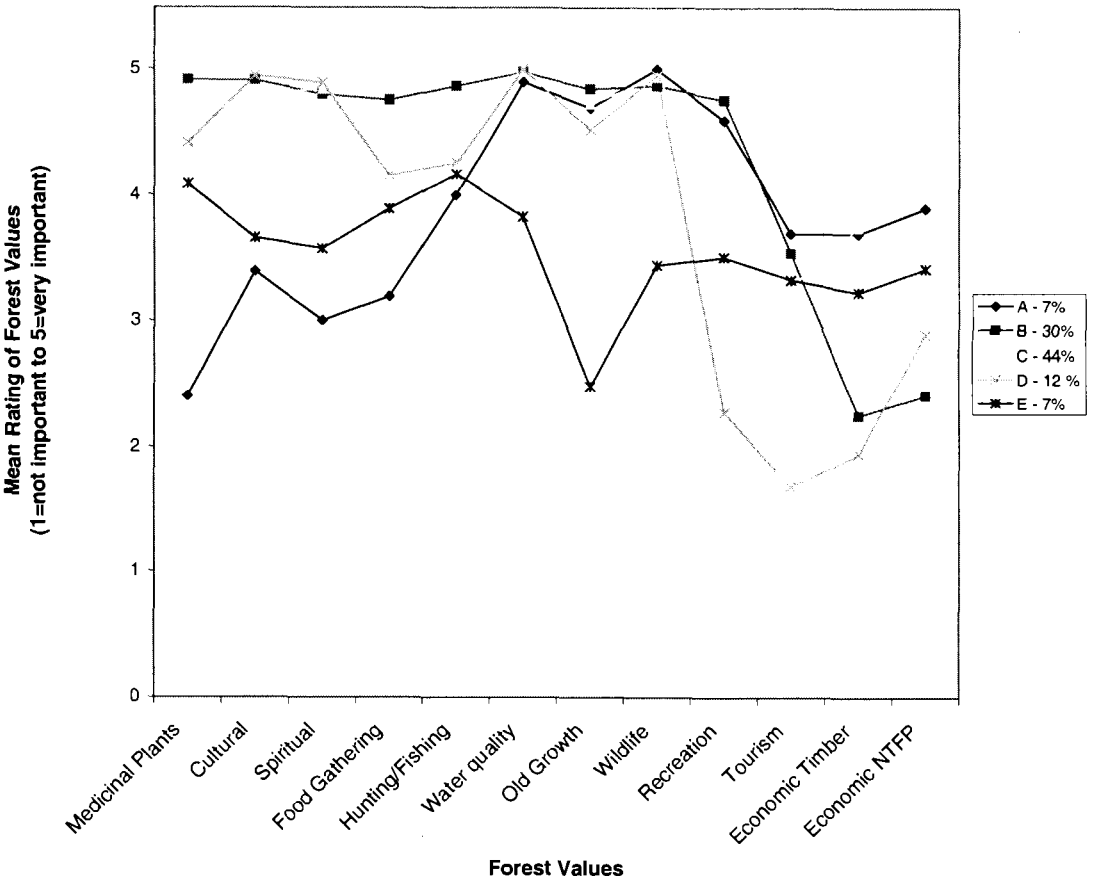

Figure 4. Mean forest value ratings for each of the five clusters (A-E)

The results of the cluster analysis confirm in more detail that an overwhelming majority of participants hold rather similar forest values. Collectively, clusters B, C, and D represent over 85% of the sampled population. Common to all three groups is the following evaluation:

- The "Traditional" component (medicinal plants, cultural, spiritual, food gathering, and hunting/fishing) and the "Ecological" component (water quality, old growth, and wildlife habitat) were rated as important or very important for all three groups;
- The "Recreational" (recreation and tourism) component was somewhat important; and,
- The "Economic" (economic timber and economic NTFP) component was not important or somewhat important.

One small group of participants (Cluster A, 7%) appears to hold rather different opinions on several values; i.e. they seem to be less enthusiastic about some of the traditional values (cultural, spiritual, medicinal plants), while another small group of participants (Cluster E, 7%) defy any clear interpretation.

4.1.2 Forest Related Activities

In the community survey, participants were also asked about the kinds of forest based activities they participated in. As illustrated in Figure 5, participants indicated a high level of participation in a number of forest related activities. The results of this part of the survey indicate that the forest is well used by Cowichan Tribes' community members and remains a central component of many people's lives by providing food, medicines, wood, and a location for spiritual activities.

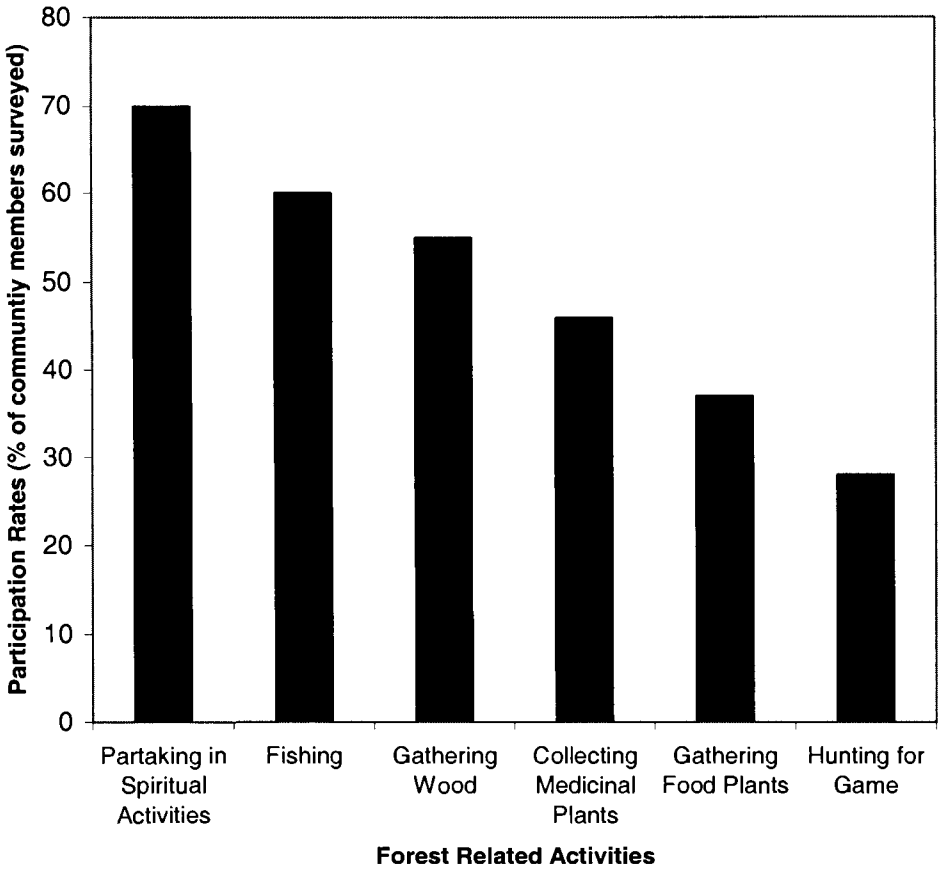

Figure 5. Level of involvement in forest related activities by Cowichan community members.

4.1.3 Forest Management and Practices

Participants were asked a series of questions about the preferred types of forest management in an area where Cowichan Tribes could assert management rights in the future (in reference to the potential procurement of a community forest tenure). Participants were asked to indicate whether they strongly agreed, agreed, were neutral, disagreed, or strongly disagreed with the following statements.

1. "We should use the forest for other things besides taking trees to sell."
   - 87% of participants agreed or strongly agreed
2. "Cowichan teachings should be a part of how we manage our forest."

- 90% of participants agreed or strongly agreed

3. "Taking trees out of the forest to make money should be a priority."
    - 62% of participants disagreed or strongly disagreed, 9% agreed or strongly agreed, and the other participants were neutral

The responses to these statements suggest that participants think that accruing economic benefits from the forest is not the priority. Rather, Cowichan Tribes' approach to forestry should effectively incorporate a diversity of values into forest management, particularly those that are unique to Cowichan people, such as Cowichan teachings based on traditional values.

Additionally, participants were asked whether they thought logging should occur in the community forest:

- 44% thought logging should occur in the community forest; and
- 56% thought logging should not occur in the community forest.

Participants were then asked if there was logging in the community forest what would be their preferred method of harvesting. Associated with this question was a brief discussion between the participant and the survey team regarding the pros and cons of three different harvesting systems[14] (clearcutting, variable retention, and selection). Out of those surveyed:

- 4% preferred clearcutting;
- 16% preferred variable retention; and
- 80% preferred selection.

In an open-ended question, participants were asked to generate ideas about what the community forest could be used for. Many ideas were generated and themes arose out of participants' comments. Out of the total sample, 30 people did not respond to this question. Below are the three predominant opportunities identified for the community forest with the number of times specific topics were referenced by individual participants.

[14] As discussed in section 2.4.1, the measurement error associated with the results of this question may be high. The interviewers attempted to be consistent and unbiased in their presentation of the pros and cons of three types of logging (based on information presented in Silvicultural Systems in British Columbia published in 1999 by the Ministry of Forests) and used photos to illustrate local examples of the three systems. There may be a bias associated with the information presented by the interviewers and a bias introduced if more detailed discussions occurred between the interviewer and participant (if the participant posed additional questions).

1. Spiritual/cultural opportunities: Protecting areas for spiritual purposes was identified as another important use for the community forest (35). Spiritual uses of the forest are diverse and include (but are not limited to) maintaining private areas for spiritual activities such as bathing (10) and connecting with nature (18), as well as collecting important medicinal plants (34). Many people identified the importance of using the community forest to support cultural activities (50), including activities such as cedar-stripping (12) and acquiring firewood for the bighouse (11).
2. Learning/educational opportunities: Many people identified the need for a learning facility in the community forest (31). The community forest could be used as a place to engage in cultural teachings (39) and develop community awareness (29) about the forest and its uses.
3. Recreational opportunities: A place where Cowichan people could go to camp (33), walk (23), and generally spend time outdoors was seen as a desirable use for the community forest. Some suggested that the community forest could be used as a park (15).

Additionally, a number of people suggested that limited logging should be conducted in the community forest (38) and the wood could be used for various purposes such as building material for houses on Reserve (21). Ensuring adequate wildlife habitat was also brought up by a number of participants (27). Many people expressed a strong desire to see more opportunities for youth, whether they be educational, spiritual, or recreational. Opportunities for youth to re-connect with Cowichan culture and develop a respect for nature were identified as immediate needs.

When asked whether a facility or gathering place should be constructed in the community forest, over 90% of the participants supported the idea. Many ideas of what could be offered at this type of facility were generated, including programs to promote cultural awareness both for Cowichan and non-Cowichan people, educational programming, and life skills and job training.

The following quotations are from individuals who participated in the survey during discussions regarding the management of a community forest:

- The community forest should be managed by Cowichan people. If there are not trained people then some should be educated in forestry. Elders should be involved.
- The community forest should be managed by people who are thinking of other people and not themselves. There are too many businesses that think about filling their own pockets and not others at large.
- The community forest should be run with community input especially from the elders. Both groups should be educated about the forestry aspects before big decisions are made.
- Making decisions about the community forest should not just be Chief and Council making the decision – community ideas are important. Should have lots of ideas about what is going on there.
- We have to ensure that Cowichan people are involved in the community forest from beginning to end – training and providing Cowichan Tribes' members with opportunities to perform tasks in the community forest will ensure overall success.

Participants indicated a strong interest in ensuring effective management at a planning and operational level in forestry initiatives. Primary concerns identified in the interviews included ensuring Cowichan people's involvement in forestry and enabling community members to participate in decision-making processes related to the forest. When asked, almost 70% of participants indicated they were interested in participating in events related to the community forest. Overall, community members would like an opportunity to participate in the decision-making process related to forest management issues.

4.1.4 Overall Community Values

The results of the community survey provide a strong indication that ecological and traditional values are important to Cowichan people. Community members ascribe the most importance to cultural values, spiritual values, medicinal plants, food gathering, hunting/fishing, water quality, old growth, and wildlife habitat. Community members indicated a high level of involvement in forest related activities that are linked to many of the values they consider important. People also communicated an interest in Cowichan

teachings (related to traditional values and knowledge) integrated into Cowichan Tribe's approach to forestry.

The participants in the community survey favoured the least intensive harvesting system and less than half the participants felt that logging should occur in an area such as a community forest. Participants communicated their interest in community members having meaningful opportunities to be involved in forest management and that a range of benefits should be derived from the forest if forestry is pursued. People identified a need for educational and learning opportunities related to many aspects of the forest and forest management.

4.2 Cowichan Tribes' Forest Policy

In this section I will describe the Cowichan Tribes' Forest Policy (Cowichan Tribes 2002), which built on the results of the community survey and research on approaches to forest management. I will then highlight the ways in which the policy does and does not incorporate Cowichan values as communicated through the survey results. Last, I will discuss the policy in relation to the four themes of EBM.

4.2.1 Overview of Policy

The purpose of the policy is to articulate a vision of what Cowichan Tribes think forest management should look like and subsequently use the policy as a tool to work towards that vision (Cowichan Tribes 2002). The policy is a broad framework consisting of goals and objectives that will help direct forest management throughout the traditional territory. The policy is organized into three categories (the approach, the people, and the land) and covers eight major topic areas. A number of goals and objectives fall under each of the eight topics. Figure 6 is a diagram of the forest policy.

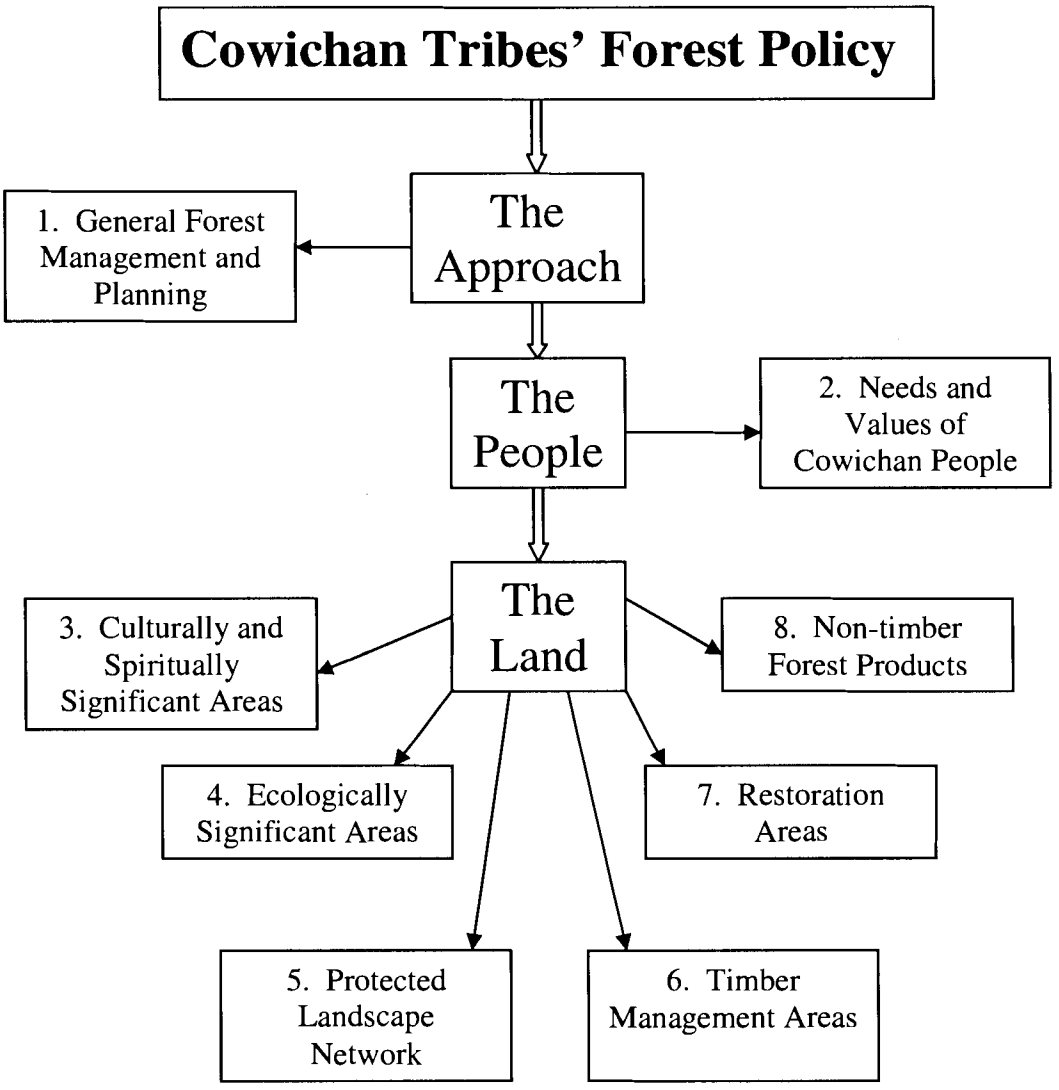

Figure 6. Diagram of Cowichan Tribes' Forest Policy

The first section of the policy, General Forest Management and Planning, describes goals under a number of broad themes including forest integrity and function, uncertainty, data collection, monitoring programs, adaptive management, and cooperation among stakeholders. The goals in the second section, Needs and Values of Cowichan People, address issues such as integrating Cowichan peoples' knowledge, respecting cultural and spiritual values, providing training and education, and promoting economic diversification. Section 3, Culturally and Spiritually Significant Areas, details goals that

advocate the protection of areas that remain viable for cultural and spiritual uses to ensure the continuation and revitalization of Cowichan culture. Section 4, Ecologically Significant Areas, details goals associated with riparian areas, old growth areas (existing and for recruitment), areas where species and ecosystems at risk are located, and areas of critical wildlife value. Emphasis is placed on identifying and prioritizing ecologically significant areas, and promoting/maintaining ecological integrity. Section 5, Protected Landscape Network, proposes the establishment of a contiguous network of culturally, spiritually, and ecologically significant areas throughout the territory. In Section 6, Timber Management Areas, goals address issues such as rates-of-cut, silvicultural systems, stand-tending practices, water quality, access management, and baseline ecological and cultural inventories. Section 7 addresses the issue of restoration. The final section of the forest policy, Non-timber Forest Products (NTFP), details goals promoting respect for cultural values in NTFP management, protection of ecological integrity of NTFP species, prohibiting the commercial development of medicinal plants, promoting sustainable community economic development, and educating harvesters regarding best practices.

4.2.2 Forest Policy and Community Values

The forest policy reflects the community values articulated in the survey in a number of ways. The following section lists various results from the community survey and identifies examples of goals and/or objectives[15] from the forest policy that integrate the survey results.

1. The results of the survey indicate that the ecological category of forest values (water quality, old growth, and wildlife habitat) was very important to the vast majority of participants. The ecological category of values is aligned with the concept of ecological integrity. In order to support these forest values, the forest policy describes the following (Cowichan Tribes 2002).
    - 4.1. Maintain the ecological integrity and function of riparian areas throughout Cowichan Tribes' traditional territory.

[15] The number before each statement refers to the section of the Forest Policy where the goal or objective can be found.

- 6.6. Ensure all necessary measures are taken to protect water quality, quantity, and timing of flow from any potential adverse effects of forest management throughout Cowichan Tribes' traditional territory.
- 4.2. Protect all remaining old growth areas within Cowichan Tribes' traditional territory. Determine and protect areas suitable for the recruitment of old growth.
- 5.1. Establish a protected landscape network consisting of culturally, spiritually, and ecologically significant areas (riparian areas, old growth areas, areas where species or ecosystems at risk are located, and critical wildlife areas).
- 6.2. For the Timber Management Areas, determine sustainable rates-of-cut and associated harvest levels at the watershed scale that do not compromise the long-term ecological or cultural integrity of Cowichan Tribes' traditional territory.

2. The survey results indicate that integrating traditional values (cultural values, spiritual values, medicinal plants, food gathering, hunting/fishing) into forest management was also very important to the vast majority of participants. It was made clear through discussions with survey participants that many Cowichan people are interested in having access to and participating in cultural and spiritual activities, as well as protecting and restoring the limited number of sacred areas that remain throughout the territory. The following are examples of goals and objectives that address this issue (Cowichan Tribes 2002).
   - 3.1. Identify and protect areas of significant cultural and spiritual value to Cowichan people.
   - 3.1.3. Prohibit timber harvesting within significant cultural and spiritual areas, with the exception of single trees taken for cultural and spiritual purposes.
   - 3.1.4. Protect and/or restore traditional bathing areas.
3. The survey results identify a high degree of participation by Cowichan people in traditional forest-related activities (e.g. spiritual activities, gathering medicines, gathering wood, hunting). In order to allow and enhance the ability of Cowichan people to participate in forest related activities the forest policy includes the following (Cowichan Tribes 2002).
   - 2.2.2. Provide the opportunity for Cowichan people to practice traditional resource harvesting activities throughout Cowichan Tribes' traditional territory.

Review these practices to ensure that the level of harvest remains within acceptable ecological limits, recognizing that they may shape the ecosystem for specific functions.

- 6.7. Develop an access management plan for forestry roads within Cowichan Tribes' traditional territory that provides an appropriate amount of access for Cowichan people to pursue traditional resource activities throughout the territory.

4. The survey results identify that most people felt strongly that Cowichan teachings (related to traditional values) should be incorporated into forest management. In order to promote the integration of Cowichan peoples knowledge and experience the forest policy includes the following (Cowichan Tribes 2002).
   - 1.4.3. Use Cowichan traditional ecological knowledge and western scientific knowledge to inform inventories used in forest management and planning.
   - 8.2.2. Draw on the knowledge of traditional practices used by Cowichan people to harvest NTFPs to inform current practices (e.g. promote the use of practices such as small-scale prescribed burns to promote vegetative regeneration).
5. The survey results indicate that people were interested in becoming more involved in forest management and planning and that community members should play a greater role in decision making. In response to the results of the survey, commitments to involve Cowichan people are made through a number of different goals and objectives including the following (Cowichan Tribes 2002).
   - 1.5.5. Involve Cowichan people in monitoring programs to promote participation, education, and connection with the land.
   - 2.1.2. Establish a framework for decision making processes that meaningfully involves community members and, in particular, elders.
   - 2.1.3. Use a variety of methods to encourage participation in forest management and planning (e.g. door-to-door visits, round table meetings, tours of proposed cutblocks, written submissions, and community survey).
6. The survey results indicate that many people are interested in learning more about the forest and its uses (from both current and traditional perspectives). Participants indicated that educational efforts would also be useful, providing necessary opportunities for people to re-connect with Cowichan culture. The forest policy

promotes learning through a number of goals and objectives, including the following (Cowichan Tribes 2002).

- 2.3. Promote training and education for Cowichan people regarding forest ecosystems and forest management and planning.
- 2.3.1. Provide educational opportunities for people, especially youth, which emphasize cultural teachings and connection with the land.

As demonstrated by the previous points, the forest policy reflects community values in a number of different ways. However, the forest policy also diverges to some extent from the community perspectives presented in the survey. The majority of participants in the survey were generally not supportive of logging and rated the economic values of timber as the least important out of all the values considered. The forest policy does not suggest that the economic values associated with forestry are not important, nor does it suggest that there should be no logging. Instead, the forest policy promotes forestry that integrates a diversity of Cowichan values and promotes the diversification of economic benefits to ensure that Cowichan people share in the benefits of forest harvesting. For example, the following objectives illustrate the commitment to promoting economic diversification within the forest sector in Cowichan Tribes' traditional territory (Cowichan Tribes 2002):

- 2.4.1. Maximize the value of all wood harvested through the use of harvesting and stand-tending practices that increase the number of jobs per cubic metre (e.g. give preference to labour-intensive means of production over capital intensive heavy machinery). Ensure that operations maintain economic feasibility.
- 2.4.2. Support local value-added manufacturers and encourage the development of additional value-added capacity in order to retain more profits within the community.
- 2.4.3. Promote the commercial harvesting and marketing of non-timber forest products as a supplemental source of income and employment from the forest.
- 2.4.4. Pursue non-consumptive activities that will generate income and employment within the forest sector (e.g. eco-toursim, recreation, education, restoration).

The direction of the policy recognizes that logging can provide benefits to the community that were not specifically included in the survey's assessment of individual choices and values.

4.2.3 Forest Policy and EBM Themes

The forest policy aligns with the four themes of EBM to varying degrees. The forest policy was based on a combination of community values as articulated in the community survey, and information gathered through research on the ecological literature on sustainable forest management and prescriptive guidelines/approaches taken by other governments, First Nations, and organizations. The alignments between the policy and the themes of EBM are a result of both the influence of the literature on the forest policy, as well as a degree of consistency between Cowichan community values and some characteristics of EBM. In order to articulate how the goals and objectives detailed in the forest policy correspond with the four themes of EBM, I will discuss each theme separately.

Ecological Integrity

Cowichan Tribes' Forest Policy addresses the issue of ecological integrity from various perspectives. The forest policy advocates the development of a protected landscape network that would link culturally, spiritually, and ecologically significant areas to form a contiguous protected area within which the patterns and processes that maintain ecosystems and native species across the natural ranges of variation would be protected. Outside of the protected landscape network, resource extraction (both timber and non-timber) should occur in a manner that is consistent with maintenance of ecological integrity. For example, silvicultural systems should resemble natural disturbances within the range of natural variability at multiple scales of time and space. An emphasis on the importance of ecological restoration as a necessary component of managing for ecological integrity is included in the policy. The goals and objectives outlined in Table 4 are examples of how Cowichan Tribes' Forest Policy addresses the issue of ecological integrity. The forest policy provides a broad framework to direct

forest management and as such does not include the specific or prescriptive tools necessary to manage for ecological integrity.

Table 4. Goals and objectives from Cowichan Tribes' Forest Policy (Cowichan Tribes 2002) as they relate to Ecological Integrity.

EBM Theme	Goals and/or Objectives from Cowichan Tribes' Forest Policy
Ecological Integrity	• Ensure forest management practices are compatible with natural disturbance regimes. (1.3.5) • Maintain the ecological integrity and function of riparian areas throughout Cowichan Tribes' traditional territory. (4.1) • Form a contiguous protected zone of Riparian Management Areas across entire watersheds. (4.1.5) • Protect all remaining old growth areas within Cowichan Tribes' traditional territory. Determine and protect areas suitable for the recruitment of old growth. (4.2) • Establish a protected landscape network consisting of culturally, spiritually, and ecologically significant areas (riparian areas, old growth areas, areas where species or ecosystems at risk are located, and critical wildlife areas). (5.1) • Ensure a contiguous protected landscape network exists throughout Cowichan Tribes' traditional territory. (5.1.1) • Protect all native plants and animals, and the ecological patterns and processes that maintain them, within the protected landscape network. (5.1.2) • For the Timber Management Areas, determine sustainable rates-of-cut and associated harvest levels at the watershed scale that do not compromise the long-term ecological or cultural integrity of Cowichan Tribes' traditional territory. (6.2) • Use silvicultural systems that: maintain ecological integrity and function of forests, promote even and uneven-aged forest structure, and resemble natural disturbances within the range of natural variability, at multiple scales of time and space. (6.3) • Ensure all necessary measures are taken to protect water quality, quantity, and timing of flow from any potential adverse effects of forest management throughout Cowichan Tribes' traditional territory. (6.6) • Incorporate ecological restoration of degraded areas into forest management and planning in order to promote forest ecosystem structure and function across harvested landscapes. (7.1) • Protect the ecological integrity and function of all NTFPs and manage accordingly. (8.2)

Adaptive Management

Cowichan Tribes' Forest Policy advocates adopting an *adaptive approach* to forest management at Cowichan Tribes. Adaptive management is formally understood as a process in which policies are designed as hypotheses and management is implemented as an experiment to test hypotheses. The Forest Policy advocates for a more informal and

looser approach to adaptive management based on "learning by doing" that may be better described as an adaptive approach. A commitment to monitoring the impacts of forest management on ecological, cultural, social, and economic values is clearly outlined in the policy. The policy articulates the need to implement long-term community-based monitoring programs that will produce useful and reliable information to integrate into future management and planning. However, the forest policy does not explicitly describe what institutional mechanisms will be used to support an adaptive approach to forestry. Table 5 provides examples of goals and objectives from the forest policy that relate to adaptive management.

Table 5. Goals and objectives from Cowichan Tribes' Forest Policy (Cowichan Tribes 2002) as they relate to Adaptive Management.

EBM Theme	Goals and/or Objectives from Cowichan Tribes' Forest Policy
Adaptive Management	• Acknowledge uncertainty and invoke the precautionary principle in forest management and planning. (1.2) • Monitor the consequences of forest management on ecological, cultural, social, and economic values. (1.5) • Design and implement long-term monitoring programs that utilize scientifically rigorous and defensible methods and are also accessible and inclusive (e.g. easily executed and low cost). (1.5.3) • Involve Cowichan people in monitoring programs to promote participation, education, and connection with the land. (1.5.5) • Develop adaptive management strategies to integrate results of monitoring programs into future forest management and planning. (1.6) • Develop a management plan to regulate the harvesting of NTFPs within Cowichan Tribes' traditional territory including plans for monitoring and adaptive management. (8.2.3)

Cooperation and Collaboration

Cowichan Tribes' Forest Policy promotes initiatives that support cooperation and collaboration between Cowichan Tribes and parties external to Cowichan Tribes who are involved in forestry within the traditional territory. Suggested initiatives include establishing agreements or processes with external parties to develop protocols, share data, protect significant areas, etc. However, the Forest Policy does not call for the devolution of decision-making power to a broad group of Cowichan and non-Cowichan stakeholders. Cowichan Tribes have limited power in initiating such devolution of powers. Rather, the policy encourages various stakeholders and Cowichan Tribes to

adopt actions that will help move towards a collaborative model. The policy also focuses on collaborative and cooperative efforts within Cowichan Tribes in order to increase the involvement of Cowichan people in decision-making processes regarding forestry. Table 6 provides examples of goals and objectives from the forest policy that relate to cooperation and collaboration.

Table 6. Goals and objectives from Cowichan Tribes' Forest Policy (Cowichan Tribes 2002) as they relate to Cooperation and Collaboration.

EBM Theme	Goals and/or Objectives from Cowichan Tribes' Forest Policy
Cooperation and Collaboration	• Promote cooperation and mutual learning between Cowichan Tribes and federal/provincial/local agencies, other First Nations, private companies, and the general public. (1.7) • Negotiate protocol agreements with existing licensees and landholders within the traditional territory. (1.7.3) • Investigate and develop reciprocal and equitable data-sharing agreements with other parties (e.g. industry, government, and other First Nations) in order to distribute and receive appropriate information to promote sustainable forest management and planning. (1.7.3) • Work with forest licensees, landholders, and agencies to provide appropriate levels of protection for designated cultural and spiritual areas. Protection measures could include Reserves, management zones, and careful application of variable retention and selection silvicultural systems. (3.1.6) • Establish a framework for decision making processes that meaningfully involves community members and, in particular, elders. (2.1.2) • Use a variety of methods to encourage participation in forest management and planning (e.g. door-to-door visits, round table meetings, tours of proposed cutblocks, written submissions, and community survey). (2.1.3)

Integration of Social Values

Cowichan Tribes' Forest Policy is informed, in part, by the results of the community survey. The results of the survey are a representation of the social values held by respondents from the Cowichan community. The social values that are integrated into the forest policy cover topics such as protecting culturally and spiritually significant areas, protecting ecologically significant areas, ensuring Cowichan people can pursue forest related activities, incorporating traditional ecological knowledge in management and planning, involving community members in decision-making, and providing educational opportunities to community members. Many of the values elicited through the community survey process align to a large extent with the themes and ideas of EBM,

therefore some of the other components of the policy that are consistent with an EBM approach, in themselves integrate social values. A variety of goals and objectives that address a broad range of topics (see section 4.2.2 for more details) serve to incorporate social values (Cowichan community values) into the forest policy. Table 7 provides examples of some of the goals and objectives that relate to the integration of social values.

Table 7. Goals and objectives from Cowichan Tribes' Forest Policy (Cowichan Tribes 2002) as they relate to the Integration of Social Values.

EBM Theme	Goals and/or Objectives from Cowichan Tribes' Forest Policy
Integration of Social Values	• Use Cowichan traditional ecological knowledge and western scientific knowledge to inform inventories used in forest management and planning. (1.4.3) • Provide the opportunity for Cowichan people to practice traditional resource harvesting activities throughout Cowichan Tribes' traditional territory. Review these practices to ensure that the level of harvest remains within acceptable ecological limits, recognizing that they may shape the ecosystem for specific functions. (2.2.2) • Promote training and education for Cowichan people regarding forest ecosystems and forest management and planning. (2.3) • Provide educational opportunities for people, especially youth, which emphasize cultural teachings and connection with the land. (2.3.1) • Identify and protect areas of significant cultural and spiritual value to Cowichan people. (3.1) • Prohibit timber harvesting within significant cultural and spiritual areas, with the exception of single trees taken for cultural and spiritual purposes. (3.1.3) • Protect and/or restore traditional bathing areas. (3.1.4) • Develop an access management plan for forestry roads within Cowichan Tribes' traditional territory that provides an appropriate amount of access for Cowichan people to pursue traditional resource activities throughout the territory. (6.7) • Promote the growth of culturally and spiritually important species in restoration efforts where ecologically appropriate. (7.1.5) • Cowichan Tribes and its' companies will not sell or commercially develop medicinal plants (or other items from the forest with medicinal properties). (8.1.1) • Draw on the knowledge of traditional practices used by Cowichan people to harvest NTFPs to inform current practices (e.g. promote the use of practices such as small-scale prescribed burns to promote vegetative regeneration). (8.2.2). • Establish a framework for decision making processes that meaningfully involves community members and, in particular, elders. (2.1.2) • Use a variety of methods to encourage participation in forest management and planning (e.g. door-to-door visits, round table meetings, tours of proposed cutblocks, written submissions, and community survey). (2.1.3)

5 Discussion

5.1 Introduction

The community survey and the forest policy reflect Cowichan Tribes' conceptualization of aboriginal forestry. The results of the community survey indicate that Cowichan community members feel that the following issues are important:

- incorporating ecological values into Cowichan Tribes' approach to forestry;
- incorporating traditional values into Cowichan Tribes' approach to forestry;
- drawing on Cowichan teachings[16] to inform Cowichan Tribes' approach to forestry;
- ensuring community members can participate in forest related activities;
- involving community members in forestry and decision-making processes; and,
- providing opportunities for learning and education about forests and forestry.

My evaluation of the forest policy suggests that the policy is well aligned with Cowichan values as articulated in the community survey and that the forest policy shares characteristics of at least one conceptualization of EBM based on Rigg's (2001) four themes. One conclusion that can be drawn from the evaluation is that, conceptually, Cowichan Tribes is using EBM as a tool to incorporate traditional values into aboriginal forestry.

In this chapter, I address the question of whether EBM is a useful tool for Cowichan Tribes and for aboriginal forestry in general. In section 5.2, I identify opportunities and challenges associated with each EBM theme in the context of

[16] Cowichan teachings are a manifestation of traditional values.

Cowichan Tribes' approach to forestry[17]. Then in section 5.3, I address the research question "What options exist for Cowichan Tribes' participation in forestry that will best facilitate their approach to aboriginal forestry?" The options for First Nations participation in forestry in British Columbia as presented in section 3.1.3 (on Reserve, crown tenure, joint venture, treaty settlement lands, co-management, and direct action) are ranked in relation to the four themes of EBM in order to determine which option will most likely support Cowichan Tribes' approach to forestry.

5.2 Is EBM a Useful Tool for Cowichan Tribes?

5.2.1 Ecological Integrity

Opportunities

An opportunity associated with managing for ecological integrity is that many of the traditional values that are important to Cowichan people could be supported within a landscape managed for ecological integrity because a synergy exists between ecological and Cowichan traditional values. In general, the traditional category of values encompasses activities or forest uses that are most fully enabled if ecological values are properly managed for and ecosystem processes and components are maintained across the landscape. For example, in Cowichan Tribes' community survey, participants identified water quality (ecological value) as a very important forest value. Water quality can be maintained through the effective management of riparian corridors and retention of riparian vegetation (Naiman et al. 1993, Bannerman 1998). Cowichan Tribes' Forest Policy advocates maintaining ecological integrity and function in riparian systems by establishing riparian management areas around all waterbodies and forming contiguous protected riparian zones throughout watersheds. Intact riparian corridors prescribed in the forest policy with the intent of protecting water quality will also contribute to the protection and/or quality of spiritually significant areas. From a cultural perspective, bathing pools used for cultural and spiritual purposes are often located in or

[17] Cowichan Tribes are still in the preliminary stages of implementing their forest policy. My analysis of the opportunities and challenges of Cowichan Tribes' approach to forestry is therefore based on both anticipated and realized issues.

near streams and the quality of the site is influenced by the intactness of the surroundings and the purity of the water (Neary 2001). From an ecological perspective, riparian corridors are considered to be the most diverse and dynamic terrestrial habitats and therefore support a disproportionate amount of the forests' biodiversity (Naiman et al. 1993, Bannerman 1998). The apparent pattern is that by protecting/managing for ecological values there may often be traditional values that are inadvertently being managed for under the same "umbrella". Given that the interface between culture and environment is not readily distinguishable in many traditional indigenous worldviews (Booth & Jacobs 1990), it is not surprising that a synergy or overlap exists between ecological values (environment) and traditional values (culture). As such, a focus on ecological integrity may serve as an umbrella to protect some of the traditional values that are integral to Cowichan Tribes' approach to forestry.

If ecological integrity is a focus of forest management as prescribed in Cowichan Tribes' Forest Policy, opportunities for community members to participate in forest related activities may be enhanced. At the coarsest scale, achieving ecological integrity at a landscape level would require the creation, maintenance, and protection of various types and stages of forest ecosystems that would in turn support a diversity of forest-related activities that Cowichan people participate in. For example, the ability of community members to gather medicinal plants would be enhanced if managing for ecological integrity was an objective of forest management. Many medicines that were used in the past are no longer abundant because the representation of forest types and stages has altered over time. As a result of the long history of industrial forest harvesting in Cowichan Tribes' traditional territory, the landbase is now dominated by even-aged second and third growth stands (MoF 2003b). This relatively homogenous landscape does not support the variety or quantity of medicines that Cowichan people once used, nor what they would like to have access to in the present day (Neary 2001). If the forest was managed with the express purpose of promoting ecological integrity, and a diversity of ecosystem types at various successional stages was present, then the quality and quantity of medicines once used may be re-established. Gathering medicinal plants is only one example of a forest-related activity that could be enhanced with a focus on ecological integrity.

Cowichan Tribes' approach to forestry with its focus on ecological integrity provides an opportunity to promote alternative forest practices that have fewer detrimental effects on the Cowichan community than previous approaches to forest management. Cowichan people have borne the costs of industrial forest practices that have had limited regard for ecological integrity for most of the previous century. Some of the consequences of poor harvesting practices in the traditional territory include a decreased number of areas available for cultural and spiritual uses (Neary 2001) and decreased quality of habitat for animals such as elk (Nyberg & Janz 1990) that Cowichan people depend on. The community survey indicated that Cowichan people are aware of the detrimental effects of the dominant silvicultural method of clearcutting. Due to their associations between clearcut logging and negative impacts on various ecosystem components and characteristics, a strong sentiment exists among community members that clearcutting should not be permitted in Cowichan Tribes' approach to forestry. Although managing for ecological integrity may not be characterized by the total absence of clearcutting, it may promote forest practices with different outcomes than the status quo approach to forestry (Swanson & Franklin 1992) in Cowichan Tribes' traditional territory.

Challenges

Cowichan Tribes have extremely limited jurisdiction over their traditional territory and therefore they cannot influence forest management at the spatial scales necessary to achieve ecological integrity. For ecological integrity to be achieved, management must occur at multiple scales (CIT 2003). The Clayoquot Sound Scientific Panel advocates four spatial scales of planning that should be incorporated into EBM: regional, sub-regional, watershed, and site (CSSP 1995b). Each of these spatial scales should be considered, but the watershed level is regarded as the minimum necessary for the successful long-term planning of EBM (Drever 2000). Cowichan Tribes' current ability to assert forest management rights is limited to Reserve lands and a potential Community Forest Pilot Agreement – the size of these areas most closely correspond with the site-level described above in the hierarchy of spatial scales. The ability of Cowichan Tribes to address the issue of ecological integrity is limited by their

lack of control over forest management within the traditional territory and the ineffectiveness of the provincial consultation process regarding development of Crown lands. If Cowichan Tribes gain management rights over increasing amounts of land through treaty settlement or acquisition of tenure, they may be able to more effectively promote ecological integrity at larger spatial scales. Successful implementation of the forest policy, with its focus on ecological integrity, will partially depend on Cowichan Tribes' ability to gain access and management rights to a larger land-base.

A lack of capacity at Cowichan Tribes may present a challenge to engaging in the necessary research to form the baseline information required to maintain ecological integrity. Accruing new ecological information and compiling existing data in order to understand how best to manage forests in a manner consistent with the promotion of ecological integrity is an integral component of EBM (Yaffee et al. 1996). A critical first step in developing an EBM plan is to create an informed picture of the relevant ecosystem, which often involves extensive inventory work. Cowichan Tribes' Forest Policy promotes the compilation of information necessary to manage for ecological integrity; however, Cowichan Tribes are constrained in their ability to collect and synthesize the data due to insufficient resources (money, time, and skills). Both western scientific knowledge and Cowichan TEK is necessary to manage for ecological integrity. Collecting TEK is a time consuming and involved process and determining ways that TEK can then be used to maintain ecological integrity is a challenge at both a theoretical and practical level (Korber et al. 2001). Achieving the necessary advances in western scientific ecological understanding is also a challenge to the successful implementation of EBM (Meyer & Swank 1996). Without additional capacity, it may be challenging for Cowichan tribes to accrue the necessary information that will support adopting an EBM approach with its focus on ecological integrity.

The reduction in short-term economic gains associated with managing for ecological integrity may present a challenge to Cowichan Tribes. As the emphasis shifts towards the maintenance of forest components and processes through a focus on ecological integrity, there is an associated reduction in short-term benefits from forestry activities as a result of decreased harvest levels (Yaffee 1996). Forgoing short-term economic gains presents a challenge to a community such as Cowichan Tribes that is

both economically and socially disadvantaged and often unable to implement important programs to address community issues due to a lack of available funds. Throughout the process of developing the forest policy, it became clear that a variety of opinions existed on how best to approach the issue of forest-related economic development. In the community survey, participants identified the need for economic development initiatives for Cowichan Tribes, but expressed their concerns that using the forest primarily as a source of economic revenue may interfere with other uses of the forest that they consider to be more important (particularly in the context of the limited amount of land that Cowichan Tribes can access and manage). The results of the survey suggest that community members are willing to forgo some level of short-term economic potential in exchange for the management and protection of other values in the context of the limited amount of land Cowichan Tribes' currently controls. The response from Chief and Council differed from that of the community in regards to the importance of short-term economic benefits. In Chief and Council's iterative review of the forest policy, a discussion ensued regarding the potential of the forest policy with its focus on ecological integrity to negatively impact economic development opportunities. Some Councilors expressed apprehension that the approach adopted in the forest policy was oriented too heavily towards cultural and ecological protection and they were concerned that it would deter the local forest industry from wanting to work with Cowichan Tribes. After additional consultation took place with Cowichan Tribes' economic development arm, Khowutsun Development Corporation (KDC), some changes were made to the forest policy. The forest policy was then resubmitted to Chief and Council collectively by the Forestry Manager of KDC and Cowichan Tribes' Environment Department staff. The buy-in from the economic development arm was critical to Chief and Council's final approval of the forest policy. As in many communities, a variety of opinions exist on how best to achieve a balance between short-term and long-term benefits.

5.2.2 Adaptive Management

Opportunities

The focus on an adaptive approach to forest management in Cowichan Tribes' forest policy may facilitate the incorporation of TEK. In an adaptive

framework, attempts to recognize and minimize uncertainty involve drawing on multiple sources of information (Moote et al. 2001). The incorporation of multiple sources of information can lead to the integration of TEK into forest management and planning. The usefulness of incorporating TEK into forest management is illustrated in the following excerpt from the Clayoquot Sound Scientific Report (CSSP 1995a:17):

> In Clayoquot Sound, scientific knowledge is based on experience of the west coast rainforest that has lasted for less than one-tenth of the lifetimes of the dominant trees in the forest. The collectively shared experience of the Nuu-Chah-Nulth, on the other hand, reaches far back into history, passed on by centuries of oral tradition. Furthermore, most scientific studies are individually based on, at most, a few years' observation, whereas the knowledge of local people is reinforced by a lifetime of experience.

Based on the diversity of experiences that are encompassed by both TEK and western scientific knowledge, uncertainty will likely be minimized if both sets of knowledge are drawn on to inform the management of forest resources. Increasingly, resource managers are recognizing the importance of incorporating TEK into management and planning in order to create meaningful opportunities for aboriginal involvement and to develop solutions that maintain biodiversity and achieve sustainability (Berkes et al. 2000, Pierotti & Wildcat 2000, Hunn et al. 2003). The growing interest in incorporating TEK in resource management is a significant departure from the status quo approach to land management, which has been generally characterized by the exclusion of the knowledge of aboriginal people (Kimmerer & Lake 2001, McGregor 2002). Frameworks that include adaptive management may be a useful tool to integrate and validate the relevant body of knowledge referred to as TEK.

Cowichan community members will have the opportunity to engage in forest management by participating in monitoring programs, through Cowichan Tribes' adaptive approach to forestry. Adaptive management relies on monitoring efforts to determine consistency with the original intent of management (Kohm & Franklin 1997). In EBM projects, members of the public often conduct the monitoring efforts. Cowichan Tribes' Forest Policy advocates the implementation of long-term community-based monitoring programs. Community participation in monitoring programs will provide an opportunity for community members to be more involved and learn more about forestry,

an interest articulated in the community survey. Advantages associated with community-based monitoring programs are that they allow community members to learn about their watersheds and foster a sense of ownership, the costs of monitoring programs decrease due to the reliance on volunteer work, and long-term involvement by the public can help to ensure data continuity (Naiman et al. 1997). In the context of aboriginal communities, community based monitoring programs are considered a useful component of providing a foundation for effective community participation (Smith et al. 1995). Cowichan Tribes' adaptive approach to forest management with its associated focus on monitoring will provide opportunities to engage and educate Cowichan people.

Challenges

A potential challenge for Cowichan Tribes associated with the implementation of an adaptive approach to management is the ability for Cowichan Tribes to support and/or fund monitoring programs that need to occur over long time horizons. Adaptive management is predicated on the effective design and implementation of long-term monitoring programs (Yaffee et al. 1996). Continuous support and funding generally facilitate the development and maintenance of monitoring programs that provide information on whether goals and objectives are being achieved. Gathering of and responding to information within an adaptive framework is a long-term exercise because the time scale at which effects of forest management can be determined extends from short time frames (e.g. impacts on bird abundance immediately post harvest) to very long time frames (e.g. soil productivity after three rotations). Although Cowichan Tribes' Forest Policy commits to the development of adaptive strategies and implementation of long-term monitoring programs, support for such programs and strategies at Cowichan Tribes may be undermined by short political terms and associated shifts in political will. Under the jurisdiction of the *Indian Act*, Cowichan Tribes have Band elections every two years, which can result in a certain degree of political instability that influences the amount of support (both political and financial) various programs receive within the Band. Challenges will likely arise if adaptive management projects at Cowichan Tribes are not accompanied by political or financial support over a compatible period.

A lack of institutional flexibility at Cowichan Tribes may present challenges to the implementation of adaptive management strategies. In addition to having long-term institutional support for the monitoring programs associated with adaptive management, flexibility within institutions to incorporate the results of monitoring into management or policy is also necessary for the successful implementation of adaptive management (Moote et al. 2001). Challenges arise when participants lack the authority to create their own self-governing institutions and do not have the ability to create the necessary institutional conditions to support EBM (Imperial 1999). Indian Bands, as defined by the *Indian Act*, have limited autonomy over governance and land management (Notzke 1994). In general, elected Band governments serve as administrative structures for implementing the approved policies and regulations of the Department of Indian Affairs – a system that has been criticized for its paternalistic and colonial overtones (Little Bear et al. 1984). The limited authority of Bands under the *Indian Act* may pose a challenge to creating institutional flexibility in a manner consistent with integrating adaptive management into forest management and planning. However, the potential exists that in a post-treaty environment Cowichan Tribes will have the authority to create their own self governing institutions for resource management (on the condition that it meets or exceeds provincial regulations), which may change their ability to implement adaptive management strategies through increased institutional flexibility. Further discussion on integrating EBM in a post-treaty environment on Treaty Settlement Lands can be found in section 5.3.

The lack of recognition in the EBM literature on the links between traditional ecological knowledge and concepts associated with EBM such as adaptive management may present a challenge to using an EBM approach to aboriginal forestry. Many similarities exist between traditional management systems employed by aboriginal people and the more recently proposed concept of EBM (Pearse 1994, Turner 1997, Nakashima 1998). In my review of the EBM literature, I found little mention of similarities or links between TEK and EBM, nor that the traditional management systems employed by indigenous people for thousands of years are often based on principles very similar to EBM. In an article on TEK, Berkes et al. (2000:1251) point out that:

> ... traditional knowledge and management systems were characterized by the use of local ecological knowledge to interpret and respond to feedbacks from the environment to guide the direction of resource management. These traditional systems had certain similarities to adaptive management with its emphasis on feedback learning, and its treatment of uncertainty and unpredictability intrinsic to all ecosystems.

Similarities exist between adaptive management and some traditional management systems. Traditional management can be reinterpreted as adaptive management or, alternatively, adaptive management can be considered a rediscovery of traditional management (Berkes 1999). EBM may be a more appropriate and empowering tool for aboriginal forestry if attention is paid to the possible links between current ideas in EBM and the long-standing knowledge and traditional management systems of aboriginal people. Indigenous knowledge should be more widely recognized as a source of knowledge that parallels modern day thinking on adaptive management and other themes of EBM.

5.2.3 Cooperation and Collaboration

Opportunities

Collaborative approaches to decision making may facilitate an active role for Cowichan community members in forest management and planning by providing specific opportunities for community involvement. The results of the community survey indicated that the majority of participants are interested in participating in Cowichan Tribe's forestry and therefore the forest policy encourages internal collaborative efforts such as developing decision-making processes that involve community members. Efforts to actively include community members in decision making related to forestry issues diverges from the current model where Chief and Council, as representatives of the community, provide sole direction on the majority of issues. The devolution of power and decision making authority to a wider and more representative group than have historically made decisions is intended to facilitate outcomes that have "buy-in" from those involved in decision making and affected by the outcome (Wondolleck & Yaffee 2000). Cowichan Tribes' approach to forestry with its focus on cooperation and collaboration provides an opportunity to increase the

engagement and involvement of community members in forest management, which should serve a number of purposes including decisions that better reflect the interests of those affected (such as community members themselves).

The focus on cooperation and collaboration in Cowichan Tribes' Forest Policy may provide an opportunity to establish better relationships between Cowichan Tribes and external agencies that participate in forest management and planning. As Cowichan Tribes have limited authority over the land-base and resources within the majority of their traditional territory, they are not in a position of sufficient power to initiate collaborative processes with external agencies/companies. As discussed in section 3.1.4, the prevalence of private land within the traditional territory precludes Cowichan Tribes' participation in the planning and management of most of the forest lands (unlike most other First Nations in BC where traditional territories consist primarily of Crown lands and the province is legally obliged to consult with First Nations regarding aboriginal interests). In response to this reality, the forest policy does not focus on the development of collaborative decision making processes with external agencies. Rather, the policy focuses on promoting actions that may lead to more cooperative and collaborative relationships between Cowichan Tribes and external agencies. Numerous recommendations are made throughout the forest policy for Cowichan Tribes to work with forest licensees, land-holders, and agencies within the traditional territory to engage in initiatives such as establishing agreements to develop protocols, share data, and protect significant areas. By pursuing such initiatives, Cowichan Tribes hopes to create a collaborative environment. Working within a collaborative environment can promote learning among participants by allowing people to gain a fuller and deeper appreciation for the concerns of other individuals or groups (Wondolleck &Yaffee 2000). To date a shared vision of how the forests should be managed within Cowichan Tribes' traditional territory has not evolved between Cowichan Tribes and external agencies/companies. Working within a collaborative framework can be a powerful tool for creating and advancing a shared vision of how forests should be managed (Selin & Chavez 1995). Hopefully through encouraging collaboration, Cowichan Tribes will develop a better relationship with external agencies based on a fuller appreciation of the issues that affect

Cowichan Tribes' approach to forestry. Ultimately, perhaps a shared vision of forest management and planning within the traditional territory will be developed.

Challenges

The difficulty of soliciting community participation in decision-making processes may present a challenge to implementing collaboration internally at Cowichan Tribes. During the survey, many community members indicated that they would like to be involved in forest management and planning. The policy provides direction to establish mechanisms that will promote internal collaboration through participation of community members in processes related to forest management. However, based on past experiences, the enthusiasm for participation indicated by survey participants is not necessarily demonstrated when events regarding land management issues are held for the community. Collaborative and cooperative processes in forest management and planning require a community willing to participate in decision-making processes and willing to engage in a learning process so that they can become informed enough to work with decision makers (Moote et al. 2001). In order for Cowichan Tribes to incorporate collaborative measures in decision making at the community level, effective methods will have to be designed to solicit and sustain participation from community members by addressing potential barriers to participation. Barriers may include: other more pressing issues to attend to, lack of time, not hearing about events, feeling that they will not be listened to, or feeling that they don't know enough about the issue to participate. During the community survey, a number of participants expressed their frustration at being asked for their opinions on various topics previously, but not seeing decisions made that reflected their input. To successfully engage community members in collaborative actions, there will also have to be clear indications of how information provided by the community will be integrated into decisions.

Cowichan Tribes may not be in an adequate position of power to successfully influence the initiation of cooperative processes or to ensure meaningful collaboration. While Cowichan Tribes can advocate for the development of more collaborative and cooperative relationships between themselves and the other parties who participate in forest management throughout the traditional territory, the various parties

are under little obligation to engage with Cowichan Tribes. Several of the parties who operate within the traditional territory, such as those who hold private lands, may perceive the benefit of engaging with Cowichan Tribes as low. Cowichan Tribes may not have the political power to initiate collaborative processes with the buy-in of the necessary parties who are active in forest management and planning throughout the majority of the traditional territory. Using ecosystem-based management as a tool for aboriginal forestry provides the directive to become more involved in collaborative efforts; however, in the case of Cowichan Tribes a long history of inequitable and turbulent relationships will make this a difficult task. Developing trust and social capital between Cowichan Tribes and external players operating within the territory will need to precede true collaboration. A number of future scenarios exist that may change the power dynamics between Cowichan Tribes and external stakeholders, giving Cowichan Tribes more power to initiate and influence cooperation and collaboration in the forest management arena. For example, new court cases could clarify the issue of rights and title on private land compelling private forest landholders to work with Cowichan Tribes to accommodate their aboriginal interests, or forest certification could be pursued broadly by licensees or landholders within the traditional territory and the accommodation of aboriginal interests could be a required component of the certification scheme.

5.2.4 Integrating Social Values

Opportunities

The opportunity to successfully integrate social values into Cowichan Tribes' approach to forestry may be aided by the possibility that, based on the results of the community survey, Cowichan community members share a relatively common set of values. The success of a community's ability to integrate social values in an EBM framework is linked to whether a community can create and sustain a common vision based on shared interests or values (Moote et al. 2001). Cowichan Tribes are a community that shares a culture, place, and history that has been established over thousands of years. Although diversity exists within the community, the results of the community survey indicated that there was a high level of agreement between respondents on a number of issues related to social values. The integration of social

values in an EBM framework may be made easier for Cowichan Tribes due to the degree to which the community shares certain values. Additionally, one of a number of philosophical underpinnings behind explicitly integrating social values into EBM is that humans are a part of nature, and consequently social values must inform and guide approaches to forest management. Concerns are articulated in some of the EBM literature regarding the fundamental challenge of people accepting that they are a part of nature, as opposed to separate from it (Grumbine 1997, Moote et al. 2001). Making choices of how to manage forest resources based on an understanding of the interconnectedness between humans and nature is not a new concept for Cowichan people. Central to the worldview of many coastal First Nations was a concept of interactive and reciprocal relationships with all other life forms (Turner 1997). As such, humans were only one species among many that were valued and treated with similar degrees of reverence and respect. The traditional management and use of forest resources occurred within a cultural context that did not draw clear lines between humans and nature. The dichotomy that EBM seeks to address may present less of a challenge for the Cowichan community, compared to some non-aboriginal communities, because Cowichan people and their ancestors had and continue to have a well developed sense of place that is guided by a traditional worldview where humans and nature are connected.

Integrating social values into forestry provides an opportunity to conduct forest management in a manner that incorporates traditional values and enables Cowichan people to engage in activities associated with traditional values. A strong sense exists among Cowichan people that culture is being lost and that Cowichan people, in particular the younger generations, will benefit from opportunities to re-engage in Cowichan culture by learning traditional teachings, participating in cultural activities, and engaging with nature. How the forest is managed has many implications for Cowichan people's ability to participate and re-engage in their own culture. In response to the high level of interest in incorporating traditional values into forest management, the forest policy is infused with commitments to recognize these values. Integrating traditional values into forest management and planning is essential if Cowichan Tribes are going to successfully manage forests in a manner consistent with the needs and values of community members.

Challenges

A potential lack of institutional and political support at the Band level may present a challenge to integrating social values into Cowichan Tribes' approach to forestry. A high degree of support exits among community members surveyed for integrating social values into forest management and planning. Chief and Council articulated a less consistent degree of support for integrating social values in their review of the forest policy. A number of Councilors had concerns regarding the economic viability of integrating social/traditional values into forest development. In response to these concerns, Chief and Council requested that additional consultation take place with staff from Cowichan Tribes' economic development arm (KDC). When the revised policy was re-tabled by staff from the Environment Department and KDC, Chief and Council passed and adopted the forest policy. The perception of some members of Chief and Council that integrating social/traditional values results in foregoing economic benefits will likely arise as a topic of discussion as the policy is implemented. More broadly, the lack of institutional and political support is recognized as a common challenge to the implementation of EBM (Cortner et al. 1996). Institutional structures generally reflect different views of management than those advocated for in EBM, and capacity must be deliberately built within institutions to both understand and sustain EBM (Moote et al. 2001). Institutional barriers to integrating social values exist in both aboriginal and non-aboriginal institutions. At Cowichan Tribes, efforts could be made to engage with Chief and Council to explore the opportunities and challenges associated with integrating social/traditional values over both short- and long-term time horizons. Generating revenue from resource development activities is necessary to provide services and projects to the Cowichan community; therefore, exploring the topic of trade-offs between social/traditional values and economic values in decision making regarding forest management would be a valuable exercise.

Institutional barriers within organizations and agencies external to Cowichan Tribes may present a challenge to integrating social values into forest management and planning. The ability of Cowichan Tribes to integrate social values into forest management and planning is tied, in part, to the willingness of agencies and

companies who operate within the traditional territory to both acknowledge and respect the inclusion of aboriginal values in land management. If the parties who currently control the decision making processes regarding forest management are not interested in integrating Cowichan social values, then it will be difficult for Cowichan Tribes to advance their EBM framework beyond the land-base and projects that Cowichan has direct control over. This issue is somewhat unique to a First Nation such as Cowichan Tribes whose traditional territory is predominantly private land, due to the lack of consultation that occurs on private lands. Similar to the issues presented in the previous section associated with challenges of cooperation and collaboration – Cowichan Tribes may gain more power in relation to the incorporation of aboriginal interests (including the integration of social values in forestry) on private lands if court decisions address the issue of aboriginal rights and title on private land and/or forest certification that requires the meaningful accommodation of aboriginal interests is pursued by licensees and landholders within the traditional territory. Lack of meaningful accommodation of aboriginal interests by external parties and the institutional barriers within organizations and agencies external to Cowichan Tribes may present a challenge to the integration of social values in Cowichan Tribes' approach to forestry.

Table 8. Opportunities associated with the four themes of EBM and Cowichan Tribes' approach to forestry.

EBM Theme	Opportunities
Ecological Integrity	• Supports community traditional values • Enhances participation in traditional forest related activities • Provides alternative to status quo forest practices
Adaptive Management	• Facilitates the incorporation of TEK • Provides opportunity to engage community members through monitoring
Collaboration and Cooperation	• Internal – Provides opportunity for community involvement • External – Provides opportunity to develop better relationships with external agencies
Integrating Social Values	• Shared community values facilitate integration of social values • Provides opportunity to incorporate traditional values

Table 9. Challenges associated with the four themes of EBM and Cowichan Tribes' approach to forestry.

EBM Theme	Challenges
Ecological Integrity	• Limited control over the landscape • Limited capacity to do research • Forgoing short term economic benefits
Adaptive Management	• Potential lack of long-term support • Potential lack of institutional flexibility • Lack of recognition in literature on contributions of indigenous knowledge
Collaboration and Cooperation	• Internal – Difficult to solicit community participation • External – Lack of power to influence the initiation of collaborative processes
Integrating Social Values	• Potential lack of internal political support • Institutional barriers within external agencies

5.3 Options for Implementation

Numerous opportunities and challenges are associated with using EBM as a tool for Cowichan Tribes' approach to forestry. A further exploration of how to build on these opportunities, as well as overcome the challenges, should be the focus of additional research. The results of this research would make significant contributions to the fields of aboriginal forestry and EBM in general, and for Cowichan Tribes in their efforts to implement the forest policy in particular. A list of possible research questions is presented in section 6.3. In the interim, it is both necessary and useful to consider which of the current options for accessing resources and participating in forest management will most likely support Cowichan Tribes' approach to forestry.

In Section 3.1.3, Table 1 outlined six options for First Nations involvement in forestry and some of the general opportunities and challenges associated with pursuing each of these options. Given that Cowichan Tribes' approach to forestry shares characteristics of EBM and that, conceptually, Cowichan Tribes' is using EBM as a tool in their approach to forestry, it is useful to understand how the options for involvement in forestry relate to each of the four themes of EBM. The immediate question of interest is – which of the options currently available to First Nations interested in pursuing forestry are most likely to support an EBM approach where traditional values can be incorporated

into forest management and planning? In order to address this question, I offer the following table (Table 10) in which I rank each of the options for involvement. I have provided a low, medium, or high ranking associated with each of the four themes of EBM to determine an overall usefulness ranking for implementing/facilitating Cowichan Tribes' approach to forestry. Table 10 is followed by a discussion of the six options and how likely each option is to facilitate Cowichan Tribes' approach to forestry.

Table 10. Ranking of usefulness of current options for implementing Cowichan Tribes' approach to forestry.

	Ecological Integrity	Adaptive Management	Cooperation and Collaboration	Integration of Social Values	Usefulness for Implementing Cowichan Tribes' Approach to Forestry
On Reserve	Low	Medium	Medium	High	Medium (3)
Crown Tenure	Low	Low	Medium	Low	Low – Medium (4)
Joint Venture	Low	Low	Medium	Low	Low- Medium (5)
Treaty Settlement Lands	Medium	High	Medium	High	Medium – High (2)
Co-Manage-ment	High	High	High	Medium	High (1)
Direct Action	Low	Low	Low	Medium	Low (6)

According to the rankings, I will discuss each option in order from most likely (1) to facilitate Cowichan Tribes' approach to forestry to least likely (6).

1. Co-Management

Co-management ranks as the most likely option to help implement Cowichan Tribes' approach to forestry. If co-management arrangements were developed over some or all of the traditional territory, the ability of Cowichan Tribes to successfully pursue their approach to forestry would be linked to the conditions of the co-management agreement. Presumably, if the direction and responsibility for management is shared equitably between governments (First Nations and non-First Nations) in a co-management arrangement, then Cowichan Tribes' goals and objectives could be integrated into the approach to forest management. The ability to manage for ecological integrity would be high if the co-management agreement(s) encompassed a significant portion of the traditional territory, enabling planning and management at a landscape level. There would also be a high possibility of integrating adaptive management strategies within a co-management arrangement if there was agreement by the other partners that adaptive approaches provide a basis for effective forest management. A co-management arrangement would involve re-defining historical relationships and developing decision-making structures where Cowichan Tribes played an equal role in land management decisions. Within this context, the possibility of achieving cooperation and collaboration would also be high if new and equitable relationships were formed through Cowichan Tribes and the provincial and/or federal governments collaborating in a co-management agreement. Development of a successful relationship between parties in a co-management agreement would depend on the ability to effectively integrate goals and objectives based on cooperation and collaboration. The ability of Cowichan Tribes to integrate social values into co-management arrangements received a medium ranking because there may be resistance on behalf of the other parties to integrate values that are specific to only one of the parties.

In theory, a co-management arrangement is likely to support Cowichan Tribes approach to forestry; however, the political realities may prevent the establishment of such arrangements. The possibility of the provincial and/or federal governments developing co-management agreements with Cowichan Tribes over some or all of the traditional territory is constrained by the amount of Crown land within the traditional territory over which the Crown has jurisdiction. The majority of lands that are held

privately are not likely to become the focus of co-management agreements with Cowichan Tribes unless there are significant changes in legislation and/or case law that would obligate private landholders to recognize aboriginal interests and work with Cowichan Tribes to meaningfully protect those interests. The options for developing co-management arrangements are likely best explored at the treaty table where shared jurisdiction over lands and resources is a substantive focus of treaty negotiations.

2. Treaty Settlement Lands (TSL)

Treaty settlement lands rank as the second most likely option to help facilitate Cowichan Tribes' approach to forestry. First Nations will most likely have the opportunity to create and implement their own laws on TSL as long as they meet or exceed provincial regulations. If this is the case, Cowichan Tribes may be able to operationalize and enforce some components of their forest policy on TSL. The ability of TSL to facilitate forest management that maintains ecological integrity is ranked as medium. Due to constraints imposed by the lack of Crown land in Cowichan Tribes' traditional territory, it is likely that the land component of a treaty settlement package will not be large enough to achieve landscape level objectives, and this will limit the ability to achieve ecological integrity. In addition, both the size and configuration of TSL will influence the extent to which ecological integrity can be effectively integrated into forest management. In a post treaty environment, there is a high possibility that pursuing forestry on TSL could facilitate adaptive management and the integration of social values because the goals and objectives associated with these themes could be entrenched in the regulatory framework designed by Cowichan Tribes for TSL. Both adaptive management and the integration of social values are less dependent on the extent or characteristics of the landbase and more dependent on the institutional arrangements overseeing forest management and planning. The issue of cooperation and collaboration with external parties is difficult to address without a better understanding of how non-First Nations interests will be represented on treaty settlement lands. TSL as a mechanism to facilitate cooperation and collaboration was given a medium ranking because although the regulatory framework for TSL could focus on internal cooperation

and collaboration, the issue of developing cooperative processes with parties external to the First Nation is difficult to determine.

3. On Reserve

On Reserve forestry ranks as the third most likely option to help facilitate Cowichan Tribes' approach to forestry. Due to the lack of a prescriptive regulatory framework governing forestry on Reserve lands, the ability to integrate an Cowichan Tribes' approach into on Reserve forestry is partly informed by the degree of political will at the Band level. The Cowichan Tribes' Band administration is able to provide direction related to some of the themes of EBM as they relate to forest management and planning on Reserve, although the final authority for timber harvesting rests with the Department of Indian Affairs. Both opportunities and challenges exist for integrating EBM themes into on Reserve forestry at Cowichan Tribes. The ability of on Reserve forestry to facilitate the integration of ecological integrity into forest management is ranked as low because of size of Cowichan Tribes' Reserves, and the limited portion of Reserve lands that are available for forest management. The ability to pursue forestry at a watershed or landscape level scale, which is necessary to manage for ecological integrity, is not possible given the current size and use of Reserve lands. On Reserve forestry facilitating adaptive management is ranked as medium. In order to manage within an adaptive framework, the Band needs to commit and engage in a long-term process regarding the use and management of Reserve land. To date, no institutional mechanisms exist to support such processes due to a variety of reasons including lack of financial resources, shifting political will, and lack of institutional flexibility. However, possibilities of integrating an adaptive approach to management on a smaller scale, such as at the project level or individual forest stand level, do exist. The ability of on Reserve forestry to facilitate cooperation and collaboration in Cowichan Tribes' approach to forestry was also ranked as medium. Pursuing forestry on Reserve has a limited ability to integrate cooperation and collaboration between Cowichan Tribes and external agencies because on Reserve development generally does not involve external stakeholders beyond the Department of Indian Affairs. However, opportunities do exist to facilitate internal cooperation and collaboration with on Reserve forestry. A focus on internal

cooperation could result in increased effectiveness in processing applications for on Reserve forestry that necessitates the input of a number of departments at Cowichan Tribes. Increased internal collaborative efforts could also strengthen the role of community members in decision making regarding forestry issues on Reserve. The ability of on Reserve forestry to facilitate the integration of social values is ranked as high. Presumably, if the political will exists to ensure that social values are integrated into forest management then forest development on Reserve would provide a key starting point for implementation. The advantages of integrating social values in forestry practiced on Reserve include that many community members share a common set of social values and there are a limited number of external stakeholders with diverging interests that would prevent the integration of social values. Integrating social values into on Reserve forestry would also serve as a useful demonstration and set an example of what Cowichan Tribes' think forestry could look like within the traditional territory.

The ability to pursue all themes of EBM on Reserve is also influenced by whether the land is Band land or CP land[18]. Generally, CP land holders can make choices about how to develop their lands and are only obligated to comply with the *Indian Act* as opposed to direction provided by Chief and Council. However, opportunities exist for the Band administration to engage with CP landholders to educate and promote particular approaches to forestry. Band land is the responsibility of the Band administration and forest practices could be directed and monitored over time by Chief and Council. If Chief and Council provided clear direction on implementing the themes of EBM on Reserve, as detailed in the forest policy, the opportunity to successfully do so would be greater on Band land than on CP land. Focusing efforts on developing effective working relationships with CP land holders may be key to advancing the integration of some of the EBM themes in Cowichan Tribes' approach to forestry.

4. Crown Tenure

Forest policy in the province of BC is currently changing as a result of shifting directions in legislation and regulations. Due to the propensity and speed of the current

[18] See section 3.1.4 for a discussion of the difference between Band land and Certificate of Possession (CP) land.

changes, it is difficult to ascertain the details and implications of the policy and regulatory environment. These changes are likely to have an effect on the characteristics of the Crown tenures available to First Nations in the future[19]. It is unclear how the current policy changes will affect the conditions, opportunities, and constraints of Cowichan Tribes if they were to become tenure holders and pursue forest management on Crown land.

Presently, a number of different types of tenures exist within the provincial tenure system, each with a distinct set of characteristics (e.g. area based vs. volume based, replaceable vs. non-replaceable). These characteristics affect the degree to which an EBM approach can be incorporated into forest management and planning. At this point, it is uncertain which types of tenures may be available to Cowichan Tribes in both the short and long-term. In the past, very few First Nations have been able to acquire a forest tenure due to a number of constraints including lack of capital, lack of financial resources, and lack of capacity. More recently, through the provincial government's "Forestry Revitalization Plan" the province has been negotiating accommodation agreements with First Nations that provide opportunities to access tenure. Accommodation agreements involve revenue and timber allocations to a First Nation in exchange for acknowledgement from the First Nation that Ministry of Forests (MoF) has provided a workable accommodation to the economic component of aboriginal interests and that the First Nation will not legally challenge MoF regarding tenure replacements and other MoF administrative decisions (MoF 2003d). The province's interest in developing accommodation agreements is driven by the need to address the uncertainty created by unresolved aboriginal rights and title issues on Crown land, which has negatively affected BC's investment climate (MoF 2003e). The accommodation agreements negotiated to date with First Nations have involved the allocation of money (forest revenue sharing on a per capita basis) and non-replaceable, short-term, volume-based tenures. Given the current political climate, if Cowichan Tribes were to acquire a Crown tenure it would most likely be short-term and volume-based. The following

[19] Engaging in an analysis of the implications of changing legislation on tenure arrangements and the effect on aboriginal forestry is beyond the scope of this research paper. However, such an analysis would be highly relevant to understanding the possibility of First Nations pursuing an EBM approach to aboriginal forestry within the provincial tenure system.

discussion of the ability of a Crown tenure to facilitate Cowichan Tribes' approach to forestry is based on the assumption that a tenure acquired by Cowichan Tribes would be non-replaceable, short-term, and volume-based.

Overall, securing a Crown tenure was ranked as the fourth most likely option to facilitate an Cowichan Tribes' approach to forestry. The ability of Cowichan Tribes to integrate the management of ecological integrity into a Crown tenure was ranked as low. A volume-based tenure limits the flexibility regarding how much wood is harvested over what time periods, which could constrain the ability to manage for ecological integrity where decreased levels of resource extraction in the short and long-term may be required. In addition, forest practices associated with volume-based Crown tenures often necessitate a modern industrial approach to forestry with clearcutting as the dominant silvicultural system, which may not facilitate the maintenance of ecological integrity where a diversity of silvicultural systems are generally employed over the landscape. The ability of a Crown tenure to facilitate adaptive management in Cowichan Tribes' approach to forestry was ranked as low. A volume-based short-term Crown tenure may not offer a time scale for planning that is compatible with the meaningful integration of adaptive mechanisms into forest management, which is generally most effective when integrated over the long-term. Barriers to implementing an adaptive approach to forest management in the case of Cowichan Tribes acquiring a Crown tenure could also include the lack of flexibility within the provincial regulatory environment that may not support an iterative and flexible approach to forest practices over time. The ability of a Crown tenure to facilitate opportunities for cooperation and collaboration in Cowichan Tribes' approach to forestry was ranked as medium. Presumably, operating a Crown tenure would necessitate further relationship building with the provincial government as well as external parties operating within or near the designated tenure. Securing a Crown tenure may provide Cowichan Tribes with opportunities to implement some of the goals and objectives related to cooperation and collaboration. The opportunity for a Crown tenure to facilitate the integration of social values was ranked as low. Experience to date has indicated that aboriginal people participating in the provincial tenure system are often forced to adopt an industrial framework and find it difficult to integrate social (traditional) values into forest management within this framework (Booth 1998, Burda et

al. 1999, Curran & M'Gonigle 1999). It is yet to be determined whether the current transitions in provincial forest policy will result in significantly different characteristics of tenures that will better facilitate Cowichan Tribes' approach to forestry.

In contrast to acquiring short-term volume-based tenure, the advantages of Cowichan Tribes securing an area-based, long-term, replaceable license would include an increased likelihood of implementing their approach to forestry. If Cowichan Tribes were to acquire an area-based tenure over a minimum of several watersheds and were able to determine an appropriate AAC and rate of cut, it is more likely that they could effectively manage for ecological integrity. Similarly, Cowichan Tribes may be better able to incorporate adaptive mechanisms into forest management if they acquired a long-term replaceable tenure, as opposed to a short-term tenure, because adaptive management is predicated on long-term planning, monitoring, and adapting. The potential for increased flexibility associated with an area-based tenure where Cowichan Tribes has greater control over the extent and time-frame of harvesting may also allow Cowichan Tribes' to more effectively integrate social values into forest management and planning. Although advantages may exist to acquiring a long-term area-based tenure over a short-term volume-based tenure, barriers such as compliance with provincial management objectives and regulations would still exist and may limit Cowichan Tribes' ability to implement their approach to forest management.

Some of the tenure arrangements that have recently been awarded to First Nations throughout BC are limited in their ability to facilitate an EBM approach to forestry. If Cowichan Tribes engage in negotiations with the provincial government regarding the acquisition of tenure, then an analysis should be conducted of which tenure arrangement, anticipating policy changes, is most likely to support Cowichan Tribes' forest policy. To ensure that Cowichan aboriginal interests can be accommodated, the provincial government should provide the most suitable tenure as determined by Cowichan Tribes.

5. Joint Venture

Pursuing a joint venture is ranked as the fifth most likely option to facilitate Cowichan Tribes' approach to forestry. The rankings associated with integrating the various themes of EBM into joint venture arrangements are the same as the rankings

associated with acquiring a Crown tenure because a joint venture involves sharing the responsibility of managing a Crown tenure. Any differences that may exist between integrating Cowichan Tribes' approach to forestry into Crown tenure versus a joint venture arrangement will be attributable to the company/partner with whom Cowichan Tribes pursue an arrangement. If Cowichan Tribes enter into a joint venture where the company/partner is not in support or interested in achieving the goals and objectives articulated in the forest policy then it will be more difficult for a joint venture opportunity to facilitate Cowichan Tribes' approach to forestry.

6. Direct Action

Pursuing direct action is ranked as the sixth and least likely option to facilitate Cowichan Tribes' approach to forestry. Direct action generally involves short-term use of forest resources in a limited spatial area. The ability of direct action to facilitate the integration of ecological integrity and adaptive management into Cowichan Tribes' approach to forestry is ranked as low for both. The spatial and temporal scale at which direct action occurs is inconsistent with forest management necessary to achieve ecological integrity or adaptive management. The ability of direct action to facilitate cooperation and collaboration in Cowichan Tribes' approach to forestry is also ranked as low because direct action may be perceived by some as a hostile act and therefore may not contribute to relationship building. Integrating social values into Cowichan Tribes' approach to forestry through direct action was ranked as medium because direct action may result in some opportunities to convey messages regarding Cowichan Tribes' social values. Overall, direct action would not serve the purpose of advancing Cowichan Tribes' ability to integrate an EBM approach into forest management and planning.

I have identified three main factors that may influence how effective an option will be for Cowichan Tribes' implementing their approach to forestry – level of authority, access to land, and political will. Figure 7 illustrates these three factors and their influence on successful implementation of Cowichan Tribes' approach to forestry.

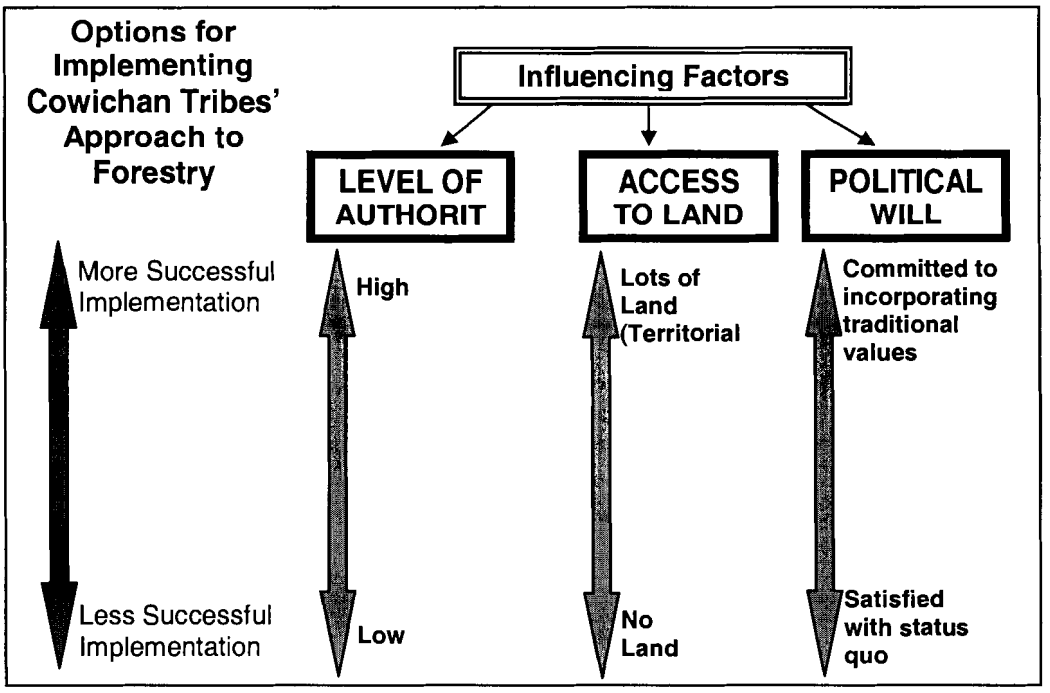

Figure 7. Influencing factors related to options for implementing Cowichan Tribes' approach to forestry.

The first influencing factor is the level of decision-making and management authority devolved to Cowichan Tribes under any given option. For example, in an option such as treaty settlement lands where Cowichan Tribes' would have a high level of authority over forest management, they will be better able to implement their approach successfully. In contrast, if Cowichan Tribes were to purse a joint venture the level of authority would be lower because decision-making would be shared between Cowichan Tribes' and the industry partner, and decision-making would be constrained by objectives set by the province through regulations governing the management of Crown tenures. The second influencing factor is access to land. The larger the amount of land that Cowichan Tribes' has control over, or can meaningfully influence the management direction on, is an important contributing factor to the success of implementing their approach to forest management. For example, if maintaining ecological integrity is an over-arching goal associated with the Forest Policy, then Cowichan Tribes will be more successful in implementing their approach if they have access and control over an amount of land that is at a scale compatible with managing for ecological integrity. The third influencing factor is less a characteristic of an option for involvement in forestry, but rather a

characteristic of Cowichan Tribes' decision-makers. If the political will exists to integrate traditional values into forest management there will be a greater chance of successfully implementing Cowichan Tribes' approach to forestry. However, if decision-makers are satisfied with the status-quo, then there is less chance for successful implementation.

6 Conclusions and Recommendations

6.1 EBM and Aboriginal Forestry

An EBM framework provides increased opportunities to incorporate traditional values into forest management and planning in comparison to a more conventional forest management framework characterized by a modern industrial approach to forestry that dominates British Columbia's landscapes. It is important to recognize that the usefulness of EBM in the context of aboriginal forestry does not lie in its ability to legitimize traditional values; they are legitimate on their own. However, overlaying a framework that is recognized within the resource management arena that facilitates the inclusion of traditional values may promote and advance the necessary and important concept of integrating aboriginal values into forestry pursued by aboriginal people.

In the case of Cowichan Tribes, EBM appears to be a useful tool for pursuing aboriginal forestry as the themes of EBM align well with the values identified by community members who participated in the community survey. The use of EBM facilitates the incorporation of traditional values into forestry at several levels. Integrating traditional values can involve: ensuring that traditional practices related to cultural, spiritual, and subsistence activities can occur; recognizing and integrating traditional ecological knowledge; and, understanding and borrowing from traditional management systems. An opportunity presented by using EBM as a tool for aboriginal forestry is that it provides a framework that prioritizes ecological values, which is often consistent or complementary to the integration of traditional values into forest management. Due to a correlation between traditional and ecological values, an EBM approach may inadvertently manage for traditional values by promoting practices that create and maintain ecological integrity. Generally, the ecosystem components and characteristics necessary to support traditional activities will be captured if forest

management focuses on ecological integrity. Therefore, opportunities for community members to participate in traditional forest-related activities may correspond with the degree to which ecological integrity is achieved. Traditional values can be incorporated if an adaptive approach to forest management is adopted. In an adaptive framework, multiple sources of information must be utilized in order to reduce uncertainty in decision making. Traditional knowledge is one of the sources of information that must be included. Traditional values are also incorporated when there is an explicit integration of social values in forest management. Integrating social values provides a rationale for incorporating the aspirations of human communities in the forested landscape. In the case of Cowichan Tribes, the explicit integration of social values requires that traditional values are defined and meaningfully addressed in forest management. As is suggested in the broader literature and the commitments made at a federal level related to forestry – the integration of traditional values is critical if First Nations people are to have meaningful control over forest resources.

In addition to an EBM framework being useful from the perspective of the integration of traditional values, using EBM as a tool presents other opportunities to a First Nation such as Cowichan Tribes in their approach to aboriginal forestry. Other opportunities include that EBM provides an alternative to status quo forest practices, through an adaptive approach to management and community monitoring programs EBM provides an opportunity for community involvement, through a focus on cooperation and collaboration EBM provides an opportunity to develop better relationships with external parties, and EBM validates community social values within a resource management framework. Overall, the ability of Cowichan Tribes to take advantage of the opportunities associated with using EBM as a tool for aboriginal forestry will require the active support of community members, Cowichan Tribes' staff, Chief and Council, and the many agencies and companies that share Cowichan Tribes' traditional territory.

One of the major challenges associated with adopting an EBM framework is the reconciliation of reduced short-term economic gains with long-term ecological, social, and economic benefits. Significant pressures exist in First Nations communities, such as Cowichan Tribes, to pursue ventures or initiatives that result in economic returns in the short-term in response to pressing needs for employment and revenue generation.

Another challenge associated with using EBM as a tool for aboriginal forestry is that EBM is most effectively implemented on a spatial scale that is inconsistent with the amount of land that many First Nations have influence or management rights over. The resources required to implement EBM from the initial research stages through to planning and implementation require expertise and capacity that First Nations communities often do not have. Additionally, the institutional flexibility and support required to implement EBM may not be provided by a Band administration, which operates under political and organizational constraints imposed by the *Indian Act*. First Nations interested in using EBM as a tool for forestry and who are pursuing options currently available for First Nations in BC may face additional challenges.

The current options for First Nations in BC accessing forest resources and participating in forest management and planning include on Reserve forestry, acquisition of Crown tenures, joint-ventures, treaty settlement, co-management, and direct action. In light of the opportunities and challenges identified in the analysis of Cowichan Tribes' approach to forestry, a preliminary review of these options suggests EBM will be more successfully integrated through pursuing treaty settlement or co-management arrangements. Depending on the implications of changing forestry legislation, acquiring Crown tenures may also provide an opportunity for Cowichan Tribes to pursue an EBM approach to forestry. To date, tenure arrangements have not been flexible enough to support alternatives to modern industrial forestry, which limits First Nations ability to pursue EBM and integrate traditional values into forest management and planning.

Although co-management and treaty settlement lands were identified as being the most useful options for Cowichan Tribes, these arrangements may be inaccessible to some First Nations, who either do not have the political power to successfully lobby for a co-management arrangement within their territory or are not in the treaty process. Even for First Nations in the treaty process, the degree of uncertainty and the anticipated timelines regarding the settlement of treaties do not make treaty settlement lands a near term solution for pursuing aboriginal forestry that uses EBM as a tool. Given the current political climate in BC and the recent Forest Revitalization Plan that is being implemented by the Liberal government, it is likely that the most realistic option for the majority of First Nations interested in pursuing forestry in the short-term is the

acquisition of short-term volume based tenures through forest accommodation agreements. These arrangements are unlikely to support an EBM approach to aboriginal forestry and/or the integration of traditional values. First Nations are left with the difficult choice of whether to participate in forestry by accepting a tenure associated with the provincial forestry accommodation agreements or to wait until an opportunity arises that is more likely to support the approach to forestry they are interested in pursuing.

Many of the ideas presented in this research regarding Cowichan Tribes' approach to aboriginal forestry and the usefulness of EBM can be transferred to other First Nations. However, one must be sensitive to the differences in cultural, political, ecological, and economic settings of other First Nations and the influence of these factors on approaches to aboriginal forestry. One of the main factors that differentiates Cowichan Tribes from many other First Nations in BC is the small amount of Crown land that exists within their traditional territory. As is discussed throughout this research paper, the lack of Crown land affects the degree to which Cowichan Tribes can use EBM as a tool for aboriginal forestry because of the limited influence Cowichan Tribes has on forest management and planning beyond the lands that they have direct management rights over. Other differences include the large size of the Cowichan Tribes Band and the location of Cowichan Tribes in an area that has been the focus of intensive forest development for over 100 years. Despite these differences, I believe that Cowichan Tribes along with many other First Nations in BC are dealing with the difficult issue of how to honour and meaningfully incorporate traditional values into forest management. I believe that the tension between reconciling traditional values with modern resource development exists, to varying degrees, in all First Nations communities. For this reason the opportunities, challenges, and options associated with using EBM as a tool for aboriginal forestry with the interest in incorporating traditional values presented in this paper have application for other First Nations throughout the province.

6.2 Recommendations for Cowichan Tribes

In this research paper, I have discussed the opportunities and challenges associated with Cowichan Tribes using EBM as a tool for aboriginal forestry. I make the

following recommendations to guide future action at Cowichan Tribes that could promote the implementation of an EBM approach to aboriginal forestry as encapsulated in Cowichan Tribes' forest policy, including the continued integration of traditional values into forest management and planning.

1. Negotiate new tenure arrangements or management rights.
    - Chief and Council and Cowichan Tribes' negotiators could focus their efforts on accessing forest resources through the negotiation of co-management arrangements with the provincial government and the acquisition of area-based long-term tenures.
    - Engage in an analysis of the characteristics of a forest tenure that would best suit Cowichan Tribes needs and negotiate based on this information.
2. Raise awareness regarding traditional values.
    - Cowichan Tribes' staff could secure funding to explore the idea of ecological values acting as a surrogate for traditional values and use the resulting information as a tool for leveraging support for integrating traditional values into forest planning throughout the territory.
    - Chief and Council and Cowichan Tribes' staff could engage in a discussion regarding the benefits of actively integrating traditional values into forest management, including the long-term and short-term economic implications. They could discuss the trade-offs between social/traditional values and economic values in decision-making regarding forest management and expand the dialogue by designing and delivering community workshops on the issue.
3. Encourage community support and involvement.
    - Cowichan Tribes' staff could organize a focus group of Cowichan community members who are interested in forest management and are well-connected within the community and ask the focus group to develop "best practices" for engaging Cowichan people in decision-making regarding forest management.
4. Commit to managing adaptively.
    - Cowichan Tribes' staff could employ adaptive techniques at a project level and ensure that project funding accounts for a monitoring phase, in response to the

potential lack of long-term support at the Band level to institute adaptive management.

- Explore what institutional mechanisms and/or characteristics would be necessary at Cowichan Tribes to support an adaptive framework to forestry.

5. Create operational standards for Cowichan Tribes' Forest Policy.
   - Identify the specific or prescriptive tools necessary to achieve the goals and objectives outlined in the Forest Policy.

6.3 Recommendations for Researchers

Research on the topic of EBM and aboriginal forestry will become increasingly relevant as First Nations gain increased access to, involvement with, and/or control over forest resources in BC. This project looks at one case study of an EBM approach to aboriginal forestry. Further case study research with First Nations communities, as they gain experience in the implementation of EBM, is paramount to understanding the usefulness of this framework over time. Future research should also focus on the political and economic issues associated with using EBM as a tool for aboriginal forestry. The following is a list of research questions that could contribute to the continued exploration of aboriginal forestry and EBM.

- What opportunities and challenges arise when a First Nations community has had the opportunity to actively pursue an EBM framework for aboriginal forestry for an extended period?
- What level of correlation exists between managing for traditional values on the landscape and increased participation in traditional activities by community members?
- How will the new legislative framework for forestry in BC (*Forest and Range Act*) affect the ability of First Nations to utilize EBM as a tool for aboriginal forestry?
- What would be the necessary characteristics of a tenure that would best support the use of EBM as a tool for aboriginal forestry?

- Does the provincial government have a legal obligation to provide First Nations with the opportunity to participate in resource management in a manner that allows for the integration of traditional values to ensure that aboriginal interests are not unjustifiably infringed?
- How can the resolution of modern day treaties ensure that First Nations have the opportunity to use EBM as a tool for aboriginal forestry?
- What are the economic implications, from a full cost accounting perspective, associated with integrating or not integrating traditional values into aboriginal forestry?

6.4 Recommendations for Policy-Makers and Resource Practitioners

The increasing role of aboriginal people in resource management will require policy-makers to have a clear understanding of the perspectives of aboriginal communities in BC and their aspirations for forest management. Legislation and policy should reflect this understanding because the provincial government has a responsibility to accommodate aboriginal interests. Without opportunities for First Nations to determine the values that will be incorporated into forest management and to influence the extent and type of forest management throughout their traditional territories, meaningful accommodation will not be achieved. Provincial policy-makers must consider ways to create significant and lasting opportunities for First Nations to pursue aboriginal forestry based on goals and objectives identified and defined by First Nations communities. In order for this to occur, the province could pursue tenure reform to support the creation of a unique First Nations forest tenure. A new aboriginal tenure could provide First Nations with the opportunity to define aboriginal forestry, as opposed to pursuing forestry under the constraints imposed by provincial forestry objectives. Another option for policy-makers to support aboriginal forestry is to create the necessary mechanisms or leverage for co-management arrangements and address the reluctance demonstrated by the provincial government to engage in cooperative management with First Nations.

The operational arena of resource management in British Columbia is heavily influenced by the existence of aboriginal rights and title that exist throughout the province. The reconciliation of aboriginal title with Crown title is yet to be achieved and in the interim appropriate and meaningful mechanisms must be developed to address this issue on the ground, as well as at a policy level. Within this context, resource practitioners have a responsibility to develop an awareness of aboriginal issues (from both a historical and current perspective) and should make efforts to understand the values that exist within First Nations by developing relationships and working with individuals in aboriginal communities. Resource practitioners can then work with First Nations to develop on-the-ground decisions that begin to incorporate aboriginal values into forest management within the current system. In addition, resource practitioners can communicate to their respective companies/agencies the barriers and opportunities associated with integrating aboriginal interests at an operational level with the intention that such information can ultimately shape policy and political direction.

6.5 Final Thoughts

The face of resource management in British Columbia is rapidly changing as First Nations gain increased control over resources and land in response to addressing the reconciliation of aboriginal title with Crown title. Within this context, aboriginal people must be given the opportunity to exercise control over forest lands in such a way that they can pursue forest management and planning that incorporates and is consistent with their own values and knowledge systems and that is ecologically, culturally, and economically sustainable. As the issues of aboriginal rights and title are addressed, tools such as EBM may play a useful role in First Nations developing frameworks to guide decision-making, planning, and operations in aboriginal forestry.

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