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

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, following uy Tj
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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 sn9, Shern4TilRn ,wTm8(,hey) Tr rCSSnp to n9,(Crporatiy re0 -20.76 TD 0.0024

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

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.

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.

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.

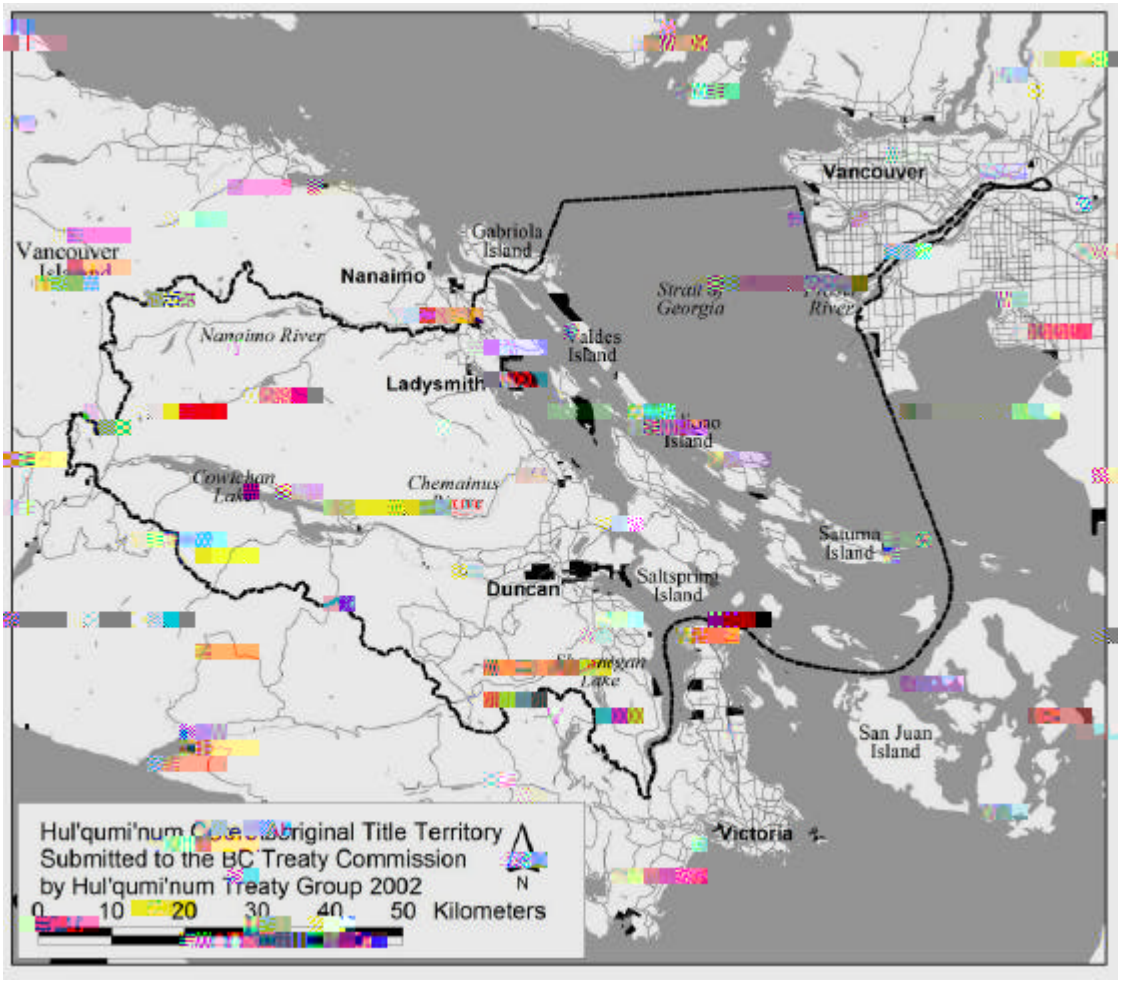

Figure 1. Map of Cowichan Tribes' traditional territory[5].

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.

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

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 s, s Tw t81r0- B4 0 .0019TEK isa

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:

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, premise 23ecifict fewardship zonow, foder 121.9inceitifit92 -gy (inceitto iwiegalpi & oral pruotD -0.002

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

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

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

Table 1. Options for First Nations involvement in forestry.

Option	Opportunity	Challenge

Option

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 tenure0.0oonal ter2hvoFe

Figure 2.

Differing from the vast majority of other First Nations' territories throughout BC, the

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

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 Affervt polimhEulated 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 reEulated 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 reEarding 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 reEaining control over both their land and resources within the

[12] The concept of CP lands (formerly known as location tickets) originated from the frvtt 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, t

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

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.

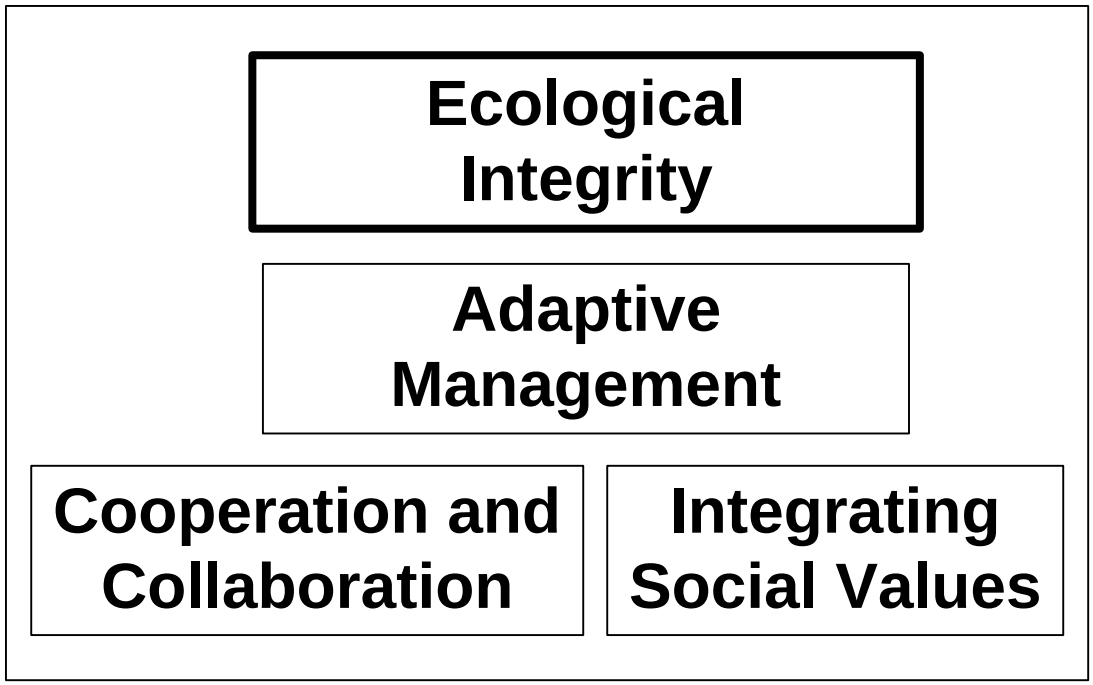

Figure 3. Four themes of ecosystem-based management.

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 S 8r-7, i5 -0j 0eo susia001 Tvimf

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 multitud

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

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

of importance is greater (indicated by a higher standard deviation)

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			

respondents. The advantage of performing a Cluster Analysis on the components instead

- 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.

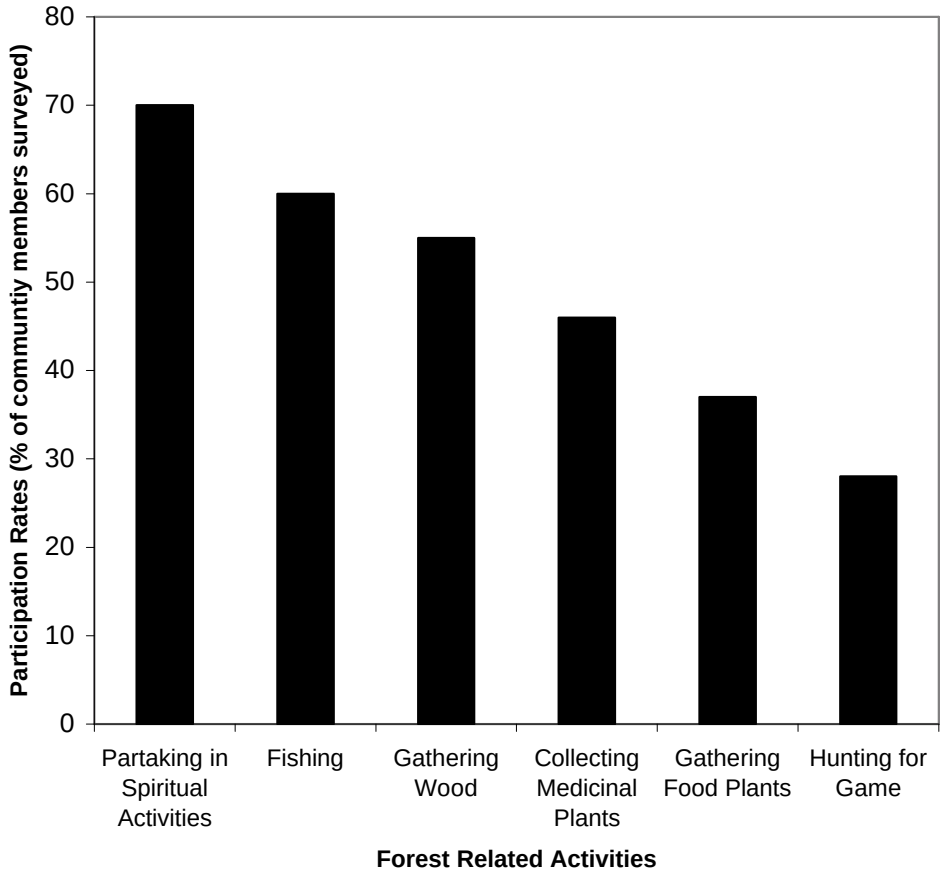

Figure 5. Level of involvement in forest related activities by Cowichan community members.

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."

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:

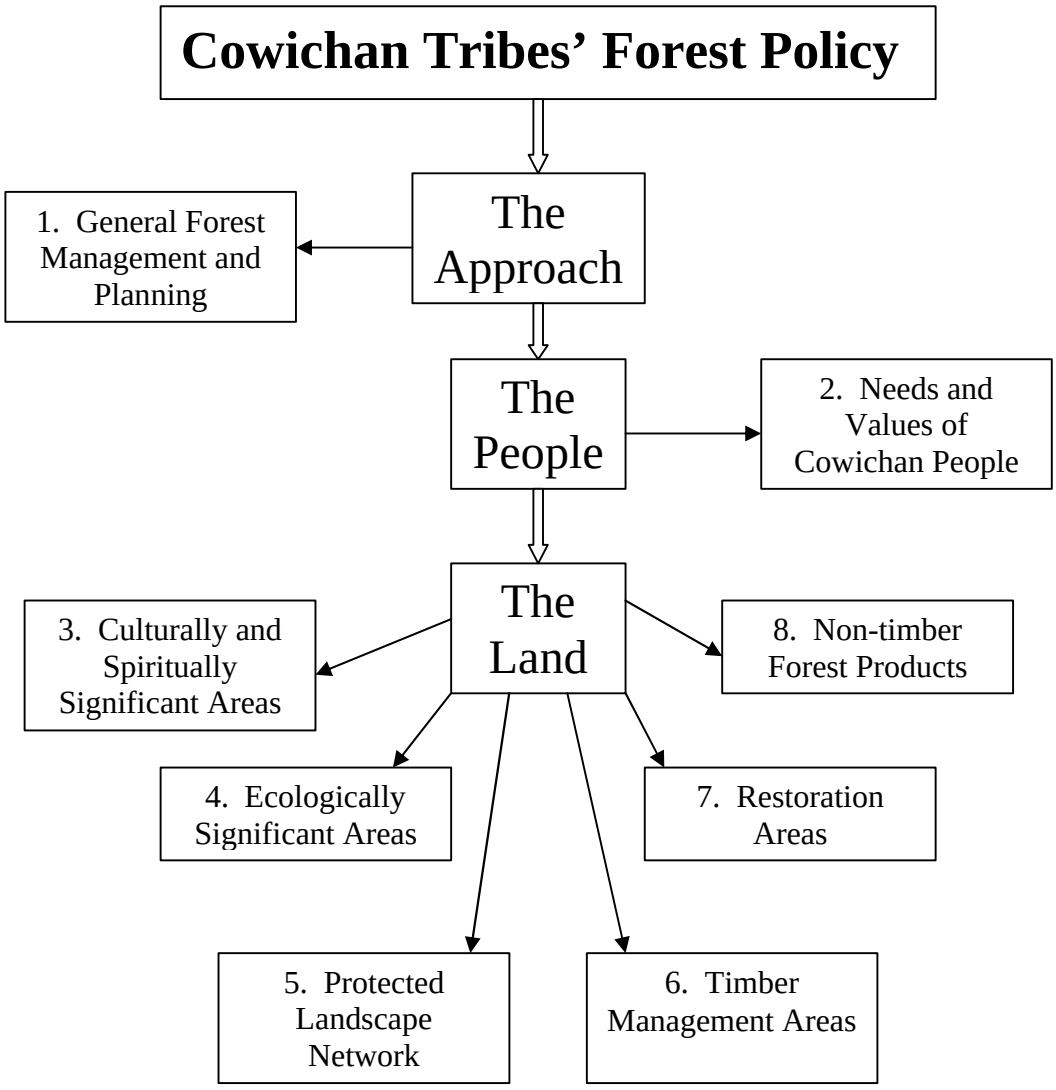

Figure 6. Diagram of Cowichan Tribes' Forest Policy

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 ripariibe- -111.dimber Forest Produrs (NT4

- 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.

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
	• 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 rareas Cowichan Tribes' traditional territory. (4.1)
Ecological Integrity	

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

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

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	

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

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 ar

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

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
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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,

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

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.ite internal 9Urision maha2sarily dor0Da 0fraess0wHasiaision

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

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. 8

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

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

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

changes, it is difficult to ascertain the details and implications of the policy and

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

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

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,

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

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

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