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I am submitting herewith a thesis written by Angela Hartsfield entitled "Forest Certification: From the Perspectives of FSC Certified Land Managers in North America." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Forestry.

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FOREST CERTIFICATION:
FROM THE PERSPECTIVES OF FSC CERTIFIED LAND MANAGERS
IN NORTH AMERICA

A Thesis
Presented for the
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Degree
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ABSTRACT

Forest Stewardship Council (FSC) certification emerged nearly a decade ago from the realms of environmental non-governmental organizations, which sought greater environmental and social accountability from the forestry sector. Since its birth, FSC forest certification has had significant impacts on land managers who have adopted FSC forest management certification for their organizations. Given limited information on impacts of certification, and in order to better understand and assess the implications of FSC forest certification on land managers and on land management; I employ a mail survey, sent to all FSC certified land managers in North America. The results of this survey are presented and focus on forest managers' goals for seeking certification and benefits of certification, land management impacts of certification realized largely through changes in land management, and overall benefits and costs of certification. Results indicate FSC certification seems to be representing the interests of those calling for greater forest management accountability, but representing less well, the interests of FSC certified forest managers.

TABLE OF CONTENTS

CHAPTER	PAGE
1. Introduction.....	1
General overview of forest policy issues.....	1
Evolution of third-party forest certification.....	4
<i>What is forest certification?</i>	4
<i>Origin of forest certification</i>	5
<i>FSC Certification</i>	6
2. A Literature Review: Benefits, Costs, and Impacts of Certification.....	10
Benefits.....	10
Costs.....	11
Certification: general implications to forest managers and forest management.....	14
Focus of this research.....	17
3. Methods.....	20
Survey analysis.....	22
4. Results/Discussion.....	23
Land management changes.....	23
<i>Land management planning</i>	23
<i>Land management practices</i>	28
The goals and benefits of FSC Certification.....	33
<i>Goals of certification and their achievement</i>	33
<i>Potential benefits of certification</i>	38
<i>Additional benefits from certification</i>	40
Overall experiences with FSC certification: costs, benefits, and impacts	41
<i>Implementation costs</i>	41

	<i>Uncertainty surrounding benefits, costs, and impacts</i>	42
	<i>Cost-benefit comparison of certification</i>	45
	<i>General opinions on certification</i>	47
	<i>Overall worth of certification to organization</i>	48
	<i>Will the organization re-certify?</i>	49
	Explaining respondents' answers on certification worth and re-certification.....	51
	<i>Logit model: re-certification</i>	53
5.	Summary/Conclusions.....	56
	Conclusions.....	61
	Further questions to be addressed.....	62
	References.....	65
	Appendix.....	70
	Vita.....	82

LIST OF TABLES

Table	Page
1. Planning changes and number of responses per change from a survey conducted of FSC certified land managers in North America, 2002.....	25
2. Categorized land management planning changes and response frequencies (freq.) from a survey conducted of FSC certified land managers in North America, 2002.....	27
3. Land management changes and number of responses per change from a survey conducted of FSC certified land managers in North America, 2002.....	30
4. Categorized land management practice changes and response frequencies from a survey conducted of FSC certified land managers in North America, 2002.....	32
5. Goal categories, responses, and average degree of achievement for FSC certification from a survey of FSC certified land managers in North America, 2002.....	34
6. Organization goals, percentages of goals according to profit or non-profit status, and percentage differences for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.....	35
7. Organization goals, percentages according to early or late certification, and differences between percentages for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.....	37
8. Potential benefits of certification, importance to organization, and degree of achievement of certification benefits for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.....	38
9. Additional benefits for land managers from FSC certification and number of responses per benefit from a survey conducted of FSC certified land managers in North America, 2002.....	40
10. Uncertainty responses surrounding certification benefits and number of responses per benefit from a survey conducted of FSC certified land managers in North America, 2002.....	43
11. Uncertainty responses surrounding certification costs and number of responses from a survey conducted of FSC certified land managers in North America, 2002.....	44
12. Uncertainty responses surrounding certification impacts and number of responses from a survey conducted of FSC certified land managers in North America, 2002.....	46
13. Certification statements and average responses to statements from a survey conducted of FSC certified land managers in North America, 2002.....	48

14. Reasons for certification's worth and number of responses from a survey conducted of FSC certified land managers in North America, 2002.....	50
15. Reasons for FSC re-certification and number of responses from land managers from a survey of FSC certified land managers in North America, 2002.....	51
16. Results of OLS regression on worth of certification from a survey of FSC certified forest managers in North America, 2002.....	52
17. Results from a logit model predicting whether an entity will re-certify from a survey of FSC certified forest managers in North America, 2002.....	53

CHAPTER 1.

Introduction

General overview of forest policy issues

Forests are an integral part of human civilization and include privately held goods and others, which are public in nature. It is widely held that traditional neo-classical economic theory, with its emphasis on economic efficiency, does not take into account all of society's values relating to these public goods. Values such as option/bequest value, ecological/biological values, equity values, and community well-being values are not well-defined in a purely free-market economy. Thus, it is imperative that forest policies are created which consider these otherwise unaccounted for societal values. Management that combines social values along with ecological and economic values has been coined sustainable management or sustainable development.

The primary question then becomes how do we manage our global forest resource base in a sustainable manner. Although many definitions of "sustainability" exist, a common definition allows that an action is sustainable when it considers economic, ecological, and social optimality in its goals for future and present societies. Adhering to this common definition, the objective of sustainable forest management includes a strong social aspect. That is, forestry is a social as well as a biological and an economic issue. The social implications, though, have been recognized much later than ecological and

economic ones. At the time of European settlement, forests seemed endless and were treated as such. Eventually, with unsustainable harvest levels scientists and policy makers realized the economic implications of such actions and environmental policies were created to curb this overexploitation. As the environmental consciousness rose, the ecological effects of logging practices grew in concern, especially water quality, wildlife, and biodiversity.

The history of human civilization shows "the correlation between the decline in forests and the impoverishment of the landscape and the people" (Woodwell 2001). This statement advances an important link in the debate over global forest sustainability. That is, the impoverishment of the landscape cannot be separated from that of the people. Thus, society has a huge stake in the policies that affect the forest resource base. Society employs the use of their government in a democracy to create and carry out effective policies to uphold forests' integrity and stability. However, "governments, even in democracies, are vulnerable to the influences of economic gradients, sometimes with the earnest conviction that the public interest is being served, sometimes in error, and sometimes through blatant corruption" (Woodwell 2001). Not only does the market place not motivate sustainable forest management alone, but also, governments can be faulty in their creation of sustainable forest policy or lack thereof.

The picture is even more complex internationally because of differing institutional contexts and the plights of developing nations. The underlying concept concerning the link between sustainable civilizations and sustainable forestry is still valid on a global scale. Now, as we have progressed into the era of ever-increasing global trade this concept is even more crucial. With global trade, trading countries impact each others

forest health. Our global accountability makes this age different than any other time in US history (Woodwell 2001). Currently, "a global market has emerged in which transactions between distant places can occur instantaneously and investment can pursue the highest rates of return with the least financial risk anywhere in the world twenty-four hours a day, everyday" (Murphy 1997). Global trade has far-reaching implications for countries that lack the institutional framework to guard against social and ecological impacts of trade.

Previous statements have highlighted that sustainability is a debatable concept and there is much room and need for discussion on this subject among a diverse group of forest stakeholders. Markets cannot always provide for sustainable use of forest resources. Furthermore, government intervention in creating environmental policies targeting forest management is not always effective. As a result, society sought new and more innovative tools aimed at achieving sustainable forest management. One tool that has emerged is that of forest certification. This tool has emerged relatively rapidly and has been the subject of much debate. In this thesis, I shed some light on this debate by examining the following three aspects of FSC forest certification: 1.) The impacts of FSC certification on forest operations including planning and practices; 2.) The benefits of FSC certification to forest management entities; and 3.) The overall worth of certification to these entities. These objectives are discussed in more detail at the end of the next chapter.

Evolution of third-party forest certification

What is forest certification?

Third-party forest certification is a voluntary, market-based tool designed to verify that a forest entity is practicing sound forest management. This is accomplished when that entity meets designated standards set by a specific certification scheme. The certification scheme or body, however, does not certify forests itself. Instead, it accredits certifiers who certify forest management entities. For all third party certification schemes, an auditor or group of auditors from the certified company must examine a forest's management. If the management meets the standards and criteria of that certification scheme, then it is awarded certification status. Some schemes also have an additional audit mechanism called a chain of custody audit. Here, a panel reviews a forest product company's procedure for tracking wood from the stump to the end consumer (Timber Certification 2002). If the company proves that a specified percentage of the wood comes from well-managed forests, then it is issued a label that designates its wood as such.

This type of independent verification of forestry can have multiple benefits to the forest, their managers, and the general public. Summarizing these benefits, the National Resources Council of Maine (2001), suggests that any third party audit should do the following: assure the public in a transparent process that a forest is being managed ecologically and economically sustainably, provide managers an independent assessment of their system of management and how it can be improved, and assume that the rights of

indigenous people and the local public have been upheld. Thus, many of the existing certification schemes contain standards, which strive to uphold the social, ecological, and environmental values of the forest and its management. According to Auld et. al. (2001), "The FSC conception of certification envisions new policymaking structures where social, economic, and environmental interests compete equally in the (private) policy making process." It should be noted that "forest certification is one of the few policy instruments that directly addresses the linkages between social issues, equity, and sustainable resource use", however, it is not "the panacea to solve all the problems related to the current world forest crisis and poverty" (FSC 2002). Given changing global resource situations and that many view present institutions guiding forest use as ineffective, forest certification has been developed and offered as an innovative policy tool.

Origin of forest certification

Concern for the world's tropical forests has been a pressing issue in the past several decades. As a result, during the 1980's, many developed countries called for boycotts of tropical timber. These actions brought international attention to the issue, labeled it a forest crisis, and established an environment from which a variety of intergovernmental efforts have been created. In 1985, the Tropical Forestry Action Plan was created (TFAP); in 1986 the Intergovernmental Tropical Timber Organization was formed (ITTO), and in 1992 the United Nations Conference On Environment and Development (Earth Summit) occurred. Over time and for multiple reasons, the issue of tropical deforestation evolved into one of global forest concerns regarding the sustainable management of boreal and temperate forests. Thus, these global initiatives were created

with the purpose of halting international forest destruction, illegal logging, and unsound forest management practices. However, many stakeholders were dissatisfied with the results of these intergovernmental initiatives and felt that a more innovative approach must be taken to ensure the sustainability of the world's forests. Furthermore, the boycotts of tropical timber served only to worsen the situation, devaluing tropical forests, and making it more profitable to cut and burn large acreages for unsustainable agriculture. Bass (2001) states that these consumer bans and boycotts of tropical timber "indeed may have offered lubricants for a tropical chainsaw massacre." Consequent pressure from non-governmental organizations, especially the World Wildlife Fund (WWF), prompted various NGO's to lay the groundwork for the first of these more innovative approaches, the Forest Stewardship Council. In 1993, the Forest Stewardship Council (FSC) had their founding assembly, and in 1994, they agreed upon a set of statutes, principles, and criteria that would be the basis of their certification standards (Lindhal 2000). During the period from 1994 through 1999, six other major certification schemes were born. These included the Sustainable Forestry Initiative (SFI) (1994), the Lembaga Ekolabel Indonesia (1994), the Canadian Standards Association (1996), the African Timber Organization (1998), the Pan European Forest Certification (1999), and the Malaysian Certification Council and National Timber Certification Council (1999) (Lindhal 2000).

FSC certification

FSC certification is unique for several reasons. First, FSC was the first to develop a certification scheme. Second, its scope is global, offering a worldwide system of certification. All other certification bodies are regional or national in scope, meaning

they only certify forests in their country or region of origin. Currently, there are two major North American FSC accredited certifiers. Smartwood is a non-profit program of the Rainforest Alliance. The other, and a for-profit effort, is Scientific Certification Systems (SCS), which offers certification services in multiple fields including forests and organic food. The Forest Stewardship Council was developed in order to "promote global standards of forest management, to accredit certifiers that certify forest operations according to such standards, and to encourage buyers to purchase certified products" (Bass 2001). FSC standards consist of ten principles: 1.) Compliance with laws and FSC principles, 2.) Tenure and use rights and responsibility, 3.) Indigenous people's rights, 4.) Community relations and workers' rights, 5.) Benefits from the forest, 6. Environmental Impact, 7.) Management Plan, 8.) Monitoring and Assessment, 9.) Maintenance of High Conservation Value Forests, and 10.) Plantations. Each principle has its associated criteria, which total 56. These principles and criteria are used in 50 different countries and serve as the basis for evaluating forest management (Bass 2001).

Currently, FSC is creating regional standards for the United States. The final result of this work will be a total of nine sets of regional standards, developed by a broad stakeholder constituency and field- tested. Worldwide, there are 29.63 million FSC certified hectares of forestland. Of this area, 5.72 million hectares lie in North America. (FSC 2002). The majority of FSC certified forests are located in industrialized countries, namely the United States, Canada, Sweden, Finland, and Poland. This assumes a major paradox concerning certification, "while it arose from concerns over tropical deforestation, certification is mostly expanding in industrialized countries" (Kiekens 2000).

Originally created as a tool to combat tropical forest mismanagement, the FSC has rapidly become global in its scope. According to Bass, this phenomenon occurred "in response to legitimate worries about temperate and boreal forest practice, and to the interest and opportunism both of producers operating in these forests and retailers selling their products" (2001). FSC is now the most prevalent certification system used within North America in terms of the number of certified organizations. However, the SFI system has already surpassed it in the area certified. A total of 15.6% of all the FSC certified forest area is located within North America. Latin America contains 12.1%, Africa 3.4%, Europe in the lead with 66.1%, and finally the Asia Pacific countries with 2.9% (FSC 2002).

FSC and subsequent systems of certification were formed because of a need for a "fair mechanism to identify products from well managed forests" (Lindhal 2000). Certification was successful because of large influential ENGO's and the pressures they exerted onto such major retailers as Lowes and Home Depot (Gereffi, Johnson, and Sasser 2001). The strong influence of various large ENGO's prompted both Lowes and Home Depot to publicly state a preference for certified wood, and in the beginning that preference was specific to FSC certified products. Now, it is extended to other systems such as SFI. However, certification has been relatively unsuccessful in drawing public recognition and the support of general consumers. It was originally thought that forest certification would offer the opportunity to make price reflect cost (Murphy 1997). This meaning that the social costs, not factored into free-market activities of timber, would surface in price premiums of certified wood products. Thus, society would ultimately pay for environmental amenities that it values. However, as previously noted, price

premiums are not surfacing and as many predicted are not expected to surface. Many of the organizations that have been FSC certified did so because of the inferred notion of a price premium. The fact that it is often referred to as a market incentive has been somewhat misleading to many of the certified entities who have yet to experience any of these higher prices for their certified wood or enhanced market access.

CHAPTER 2.

A Literature Review: Benefits, Costs, and Impacts of Certification

Benefits

As a forest policy and management tool, forest certification is associated with various benefits, costs, and impacts. The benefits of certification have been addressed in promotional and advocacy literature as well as in limited objective research. Some of the reported benefits are very optimistic. Furthermore, many are predicted or implied benefits rather than observed or realized. Objective analysis and research in this area has been lacking. One major reason for this is the fact that certification is very young. Effects and impacts of certification on forest management are just recently emerging. Studies completed in certification's infancy may not be relevant now as conditions have changed. Several benefits that have been acknowledged include the following. First, certification recognizes well-managed forests. Second, certification should improve forest management systems by means of an independent assessment. These improvements should result in more comprehensive forest planning, an area many managers admit has been historically weak. Improvements in this area also result from broadening the skills of forest managers to include better recognition of ecological, economic, and social impacts of forest management activities. Third, it has been suggested that in certain instances certification has been able to improve managers' relations with stakeholders and increase an entity's credibility in the eyes of the public and the relevant stakeholders. Last, it has been noted that certification has resulted in a

decrease in the need for government enforcement of regulations pertaining to forest management (Bass 1999). Potential benefits documented include differentiated product due to certified wood, risk reduction and mitigation because of standards met, facilitation of agreement on sustainable forest management due to multi-stakeholder development of standards, increased market share from increased buyers of certified wood, price premiums for certified wood, and securing the right to manage one's forests due to proof of well-managed forests (Bass 1999).

One very important potential benefit that has been most limited in observations is that of market benefits. These include those of price premiums for certified wood as well as greater market access due to the differentiated product of certified wood. Previous research has noted the limited materialization of market benefits particularly at the forest management level of the supply chain. According to Eba'a Atyi and Simula (2002), "certification costs tend to be much heavier for primary producers than processors" and "the benefits of certification.....tend to be realized by actors down in the supply chain." In this instance 'down in the supply chain' refers to primary producers of wood products or forest management organizations. As supplies of certified wood increase, the practically non-existent price premium is expected to further decline, leaving the benefit of increased market access as the greatest potential benefit for forest management entities (Eba'a Atyi and Simula 2002).

Costs

However, in order for these benefits to be realized further an "awareness-raising about the pros and cons of certification" needs to be addressed (Bass and Simula 1999). Managers are not going to invest in certification unless it is economically efficient for

them to do so. Because certification is a voluntary approach, it has been noted that a forest entity "will not participate unless his payoff (broadly defined) is at least as high as it would be without participation, i.e., the firm must perceive some gain (or at least no net loss) from participation" (Alberini and Segerson 2002). They will only be willing to consider certification if perceived benefits outweigh perceived costs.

There are several types of costs associated with certification. These include direct costs, indirect costs, and chain of custody costs. Direct costs are those which come from the actual assessment processes by the certifier and the annual audits as well. Indirect costs come from changes in forest management, for example improvements to forest roads, a reduced harvest, or increased staff costs (Timber Certification 2002). If the forest manager opts for a chain of custody audit where the certifier must source the entity's wood products, then there is an additional cost for that audit (Bare 2000). The direct costs of certification can be quite high, ranging from \$3,000 to \$7,000 for a 200-acre tract (Rickenbach et al. 2000). Other cost ranges include initial audit estimates of \$.25 per acre to a few dollars per acre, with the annual audit consuming \$.05 to over \$.25 an acre (Hansen and Bratkovich 2002). Total costs, for example, for the Collins Pine Company, totaled \$60,000 for one of its locations and \$80,000 for another location. Yearly audit fees total about \$7200 for the company. In terms of indirect costs of responding to certification's conditions, the capital improvement costs for Collins Pine may total \$250,000 per year for a few years. However, while these are considerable, for a company the size of Collins Pine, such costs do not represent a large percentage of total sales (Hansen and Punches 1999).

On the other hand, these costs *are* especially significant to small forest landowners, and they have proved a great deterrent to companies that would otherwise opt for certification. The SAF Task Force on Forest Management Certification found that "Large landowners can spread additional costs across many acres, while small, non-industrial landowners do not have the advantage of scale to help buffer their costs" (1999). Consequently, strategies such as group certifications and resource manager certification have been developed. Group certification allows managers to plan where "the combined forest area of all participants is viewed as a single management unit" (World Wildlife Fund 2002). This permits cost distribution among various landowners. In the spring of 2003, an innovative form of group certification emerged which will now allow smaller landowners to become FSC certified more easily and less costly. The Certified Forest Resource Center (CFRC) based in Minnesota was FSC certified and is now permitted to offer certification to landowners in Minnesota, Wisconsin, Iowa, and Michigan's Upper Peninsula. These landowners will receive certification at a reduced rate, and they will receive support from the CFRC in helping them implement management changes necessary for certification (FSC 2003).

Resource manager certification allows a resource manager's (or consulting forester's) forest management plan or model to become FSC certified. He or she can then certify the forests that they manage as FSC certified according to their certified management plan (Smartwood 1999). This also has the potential to reduce costs. In this manner, a resource manager can re-distribute his or her costs of becoming certified over the lot of their clients.

Still, “many stakeholders consider that the costs of certification are outweighed by the benefits” (World Wildlife Fund 2002). Unfortunately, much uncertainty surrounds the issue of cost. This stems mostly from the unclear indirect costs that a manager may endure because of certification. Indirect costs, as previously mentioned include the implementation costs that organizations internalize in order to adhere to the conditions of certification. Some managers don’t have clear ideas of what many of these costs entail. Furthermore, many studies on certification predict that “price premiums won’t be forthcoming” (Kiekens 2000). Therefore, clearly identifying the other benefits (market and non-market) of certification and making some of the costs clearer will be important if forest managers are to seek FSC certification.

Certification: general implications to forest managers and forest management

As previously noted, research in the area of impacts of certification to the forest manager has not been as prevalent as that within other dimensions of certification. Saskia Ozinga documents some of the impacts realized in the UK and Sweden. These include “greater species diversity in new plantings, more restoration of plantations on ancient woodland sites, more use of alternatives to clearcutting and more security of public access” (Ozinga 2000). Bass and Simula (1999) suggest that much research is still needed in the area of certification impacts. They state that “building and maintaining an information base on different forest certification schemes’ standards, requirements, progress, and impacts” is necessary for the benefits of certification to be broadened and evaluated.

However, there has been some research completed on the impacts of certification on land managers. For example, *Certification Without Green Buyers?* is a discussion

paper written by WWF authors Rodney Taylor, Stuart Maginnis, and Chris Elliot. One section entitled "Commercial Advantages of Certification", describes some of the impacts of certification to forest management. The authors state that "certification reduces a forest product company's exposure to environmentally related risks and liabilities", it can "ensure that forests are managed to produce a sustained yield of timber", and it "can increase the total revenue generated from a given forest area over the long term" (Taylor et al. 1999). Another noted benefit is enhanced public image as noted in the following quote, "Several companies that have become certified have claimed they enjoy a better public image due to a combination of positive press coverage, endorsements from environmental groups and increased responsiveness to the needs of local forest users" (Taylor et al. 1999).

One study, entitled "Third Party, Performance-Based", targeted public forests including two state forests and one county forest (Mater et al. 1999). The authors found, among the many reasons for certifying their lands, managers expressed the needs to "achieve outside verification of public land management", "identify measures for improvement", "serve as a model to private land management", "better understand green certification", and "achieve cash returns and build market share." Hayward and Vertinsky (1999) interviewed FSC certified managers and owners on both industrial and non-industrial lands. The results of this study revealed differences in the goals between industry and non-industrial private forestland owners (NIPF's) for seeking certification. NIPF's objectives include the desire for "learning, achieving self-esteem through external validation, and fulfilling such societal values as meeting forest stewardship responsibilities" (Hayward and Vertinsky 1999). Industrial managers had different goals

such as “improving profits, defending market share and market access, and seeking, through external validation to maintain their public license to operate” (Hayward and Vertinsky 1999). The study also indicated that most managers were frustrated by the lack of economic benefits but did not have plans to discontinue certification of their lands. Most managers also stressed the non-economic benefits of certification, described above.

Boucher (1997) found that the first FSC certified state lands, located around the Quabbin Reservoir in Massachusetts, indicated that certification has “helped counter criticism that logging around the reservoir endangered the purity of the watershed, which supplies drinking water to the Boston area.” Seven Island’s Land Company in Maine also sought out certification very early. While FSC certification has not, according to Vice President John McNulty, allowed them price premiums it has allowed them to develop a new product, hardwood flooring. He states that, “In a market dominated by large producers, Seven Islands has gained a foothold by distinguishing itself with certification, and the company now makes about a million square feet of the flooring a year” (Boucher 1997).

In November of 1999, the World Bank and the WWF hosted a certification workshop in Washington D.C. In one study, Bass outlines three main ways in which forest certification can have an impact on forest companies. The first is its impact on forest management by the way a company plans, monitors, and tracks its forest operations and by the organization's on-the-ground or in-field management. The second main way certification impacts forest companies is the recognition that certification generates for its customers, which he states has occurred mostly for developed countries. Lastly, he indicates that certification may reward unsound forest management through

faulty certifiers or by companies unable to meet certification's standards taking their business to less discriminating buyers. (Bass 1999).

In 1993, Collins Pine Company, which produces various lumber products, became the one of the first entities to be FSC certified. In doing so, they have encountered some of the same price premium problems as other organizations. In a case study on Collins Pine, Hansen and Panches (1999) state that "Although the company has had difficulty finding premium-paying markets for its certified products, certification has enabled Collins Pine to gain access to new markets and to improve its business practices." However, on a different note, "forest certification, and the willingness of employees to spend time in the woods explaining their practices to the public, Collins Pine has earned sufficient credibility to work cooperatively with environmentalists on forest management issues", and "this credibility has enabled Collins Pine to become an active member of the Quincy Library Group, a local consensus group that includes stalwart environmentalists" (Hansen and Panches 1999). In their study they identify five major barriers deterring market benefits for certified organizations: a limited market demand, unfavorable consumer perceptions, limited distribution channel development, difficulties in meeting specific market demands, and a limited product availability (1999).

Focus of this research

Environmental policy tools of the 1970's focused on command and control strategies to deal with various environmental problems and threats. These strategies have unveiled numerous problems including "considerable inefficiency, excessive procedural rigidity, and a lack of consistency between various regulatory programs" (Ostermeier 2000). As a result of the inadequacies associated with these strategies, new innovative

policy tools have become more and more prevalent in the environmental policy arena. Dunlap et. al. describes five major tools for environmental policy making including: governmental regulation, environmental taxation, green consumerism, technological innovation, and international diplomacy (2002). Of these five tools, certification, part of green consumerism, is recognized as having unique potentials for innovative environmental policy.

As the number of FSC certified forest acres grows worldwide, so does interest and evaluation of certification as a forest management and potential policy tool. Few analysts have assessed how certification affects forest owners, managers, and land management. If it is to succeed as a viable management tool, forest managers and landowners must continue to seek certification of their forests. For this to happen, certification benefits must outweigh the costs. Forest managers need a much clearer understanding of costs, benefits, and impacts of certification. Further gains in certified forestland will be made only when managers are able to weigh measurable costs, benefits, and impacts of certification, and ultimately decide that it is appropriate for them. As a forest management tool, certification is a complex process and has multiple dimensions and associated impacts. This research evaluated the impacts, benefits, and costs of FSC certification and the clarity of these three aspects of certification. This evaluation was done from the perspectives of forest managers who have gone through the process of certification. In order to ultimately assess whether certification is an appropriate tool for addressing forest management concerns, it first "requires a positive analysis of how firms will respond to the instrument" (Alberini and Segerson 2002).

FSC was chosen because it was the first approach of its kind, its reach is global in nature, and for these reasons; it is the most widely used certification system in the world. Various dimensions of FSC certification were assessed within the following three categories: land management changes, land manager goals and benefits of certification, and the overall impact of FSC certification to land managers.

The objectives of this study were to:

1. Assess the impacts of forest certification on forest management organizations and their forest operations. Impacts assessed include changes in land management and land management planning.
2. Assess the benefits of FSC certification to the forest management organization. These included evaluating the land management entity's goals for certification and their relative achievement, the potential benefits' (according to those observed in literature) achievement, and any unanticipated benefits.
3. Assess the organization's overall experience with certification. This consisted of assessing managers' clarity on costs, benefits, and impacts of certification, evaluating the implementation costs of certification, comparing costs and benefits, assessing the overall worth of certification to the agency, and looking at the likelihood of re-certification.

CHAPTER 3.

Methods

A 100 percent mail survey was chosen to obtain the information necessary for this study. There are several possible advantages to a mail survey, all of which apply to the characteristics of this research. Of the various survey methods, mail surveys are hailed as advantageous because they are the least costly, “no interviewers are required, a large number of respondents may be contacted over a broad area, respondents are most likely to provide honest answers, more complex data can be obtained (time to consider the questions and consult other sources if necessary), and the survey can cover more types of questions, so multiple objectives can be evaluated” (Fly 2001). Furthermore, previous survey research in certification completed by telephone surveys proved difficult due to complex data, types of questions, and time consumption.

Dillman's Total Design Method (TDM) for mail surveys was followed (Dillman 1978). This method is widely held as the most successful mail survey method and one that generates the highest response rates. The appeal of TDM is "based on convincing people first that a problem exists that is of importance to a group with which they identify, and second, that their help is needed to find a solution" (State Bar of Texas 2001). Following this method, the first survey was sent on July 24, 2002. The second mailing followed one week later and consisted of a postcard reminder, which urged non-respondents to return the survey. Two weeks following the postcard an entire survey was

sent to all non-respondents. Three weeks later one last survey was sent to the remaining non-respondents, strongly urging their participation in the cover letter (Dillman 1978).

The survey population was obtained from the Certified Forest Products Council website, www.certifiedwood.org/search-modules/CertForestResults.asp. This website includes all FSC certified forests and/or organizations worldwide (Metafore 2003). A search available on the website was performed in order to locate all organizations certified for forest management in the US, Canada, and Mexico. The subsequent listing provides the name of the organization, the address, a key contact person, a phone number, an email address, the certifier, the date of the certification, the acreage managed by the organization, and the species contained within the area of forest management.

A total of 124 organizations that had been FSC certified in North America at the time of the initial mailing were identified, and a survey was sent to all of these entities. These entities included: large and small scale timber companies, one non-industrial private landowner (NIPF), community forestlands, government agency lands, park lands, university lands, forest consulting firms, resource managers, tribal lands, and tree farms. Of the 124, 20 organizations were located in Mexico, 11 in Canada, and the remaining 93 were located in the United States. For those located in Mexico, a survey was translated into Spanish, and both an English version and a Spanish version were sent. The Mexican organizations could then choose which to complete.

The survey instrument was developed after multiple draft revisions. Each draft was reviewed by a number of individuals. Those that contributed to the development of the survey include FSC staff, SCS staff, Smartwood staff, and researchers specializing in certification issues. The final survey (appendix) contains a cover letter, an introduction

to obtain some identification facts from the organization, and three major sections containing open-answer questions as well as Lickert scale 1-5 questions. The three major sections of the survey included 1.) Land Management Changes, 2.) The Goals and Benefits of FSC Certification, and 3.) The Overall Experience with Certification: Benefits, Costs, and Impacts.

All surveys were coded with a number in the lower right hand corner on the back page. This number was used to identify the organization. As surveys were received their numerical, Lickert scale answers were recorded in multiple EXCEL spreadsheets. Open-answer questions were categorized and tallied by hand.

Survey analysis

The overall response rate for this survey is 55 percent. From the total 124 surveys sent a total of 69 were returned. Of the 69, 53 are considered for-profit organizations and 16 are non-profit entities. Four out of 20 surveys mailed to Mexican organizations were returned, and 9 out of 11 surveys mailed to Canadian forest organizations were returned. Of the 69 returned surveys, 2 were from First Nations' (Native American lands) management entities and the only NIPF responded. A non-response bias test was conducted by analyzing surveys in three categories (land parcel size, profit/non-profit respondent, and date certified), and no bias was detected among respondents relative to the total population. Statistics describing the returned surveys were obtained using Microsoft EXCEL. Further analysis using Ordinary Least Squares Regression and Binary Logit models were completed in the statistical program SAS.

CHAPTER 4.

Results/Discussion

Land management changes

The first section of the survey dealt with changes in land management, including both changes in land management planning and land management practices. These two sets of results are discussed separately below.

Land management planning

Land Management Planning Changes addresses two major pieces of information and are in reference to Section 1.1 of the questionnaire. First, changes in land management planning were sought that resulted from requirements of certification. These included both planning activities and the documentation of their activities. Second, the extent of resources used to carry out these changes was sought for each change. For the first part of the question, the participant was asked to describe the three most significant changes in land management planning that were experienced by their organization. According to each answer he/she was then asked to circle the number that corresponded to the amount of resources needed to implement the changes on a scale of 1 to 3, with one meaning little or no resources, two meaning moderate resources, and three meaning significant resources. The respondents were left to determine what "little or no, moderate, and significant resources" meant relative to their situation.

A total of 50 participants indicated their first most significant planning change. These respondents on average indicated a moderate amount of resources (2.2 out of 3)

were utilized in order to implement this first change. For the second most significant planning change, a total of 43 participants responded. The average response for the amount of resources consumed was 1.97, again indicating that a moderate amount of resources were used for this change in management. A total of 34 participants responded for the third most significant planning change. The average answer in this category was 1.97 indicating that a moderate amount of resources were used in implementation. Table 1 illustrates planning changes that were described for the three most significant changes and how many responses were received for each answer category.

The responses for each change decreased in order of significance of change, from first to third most significant change. Thus, the first most significant change received 50 responses, the next 43, and the final 34 responses. This demonstrates that some respondents only had one or two significant changes to forest management planning. Furthermore, the average resources required to implement the most significant change were higher than for subsequently listed changes. The most significant change had an average resource use of 2.2 and subsequently listed changes averaged 1.97 in resources consumed. The most commonly noted planning changes were increased inventory/documentation procedures, establishing/updating forest management plans, revising harvest plans, increased forest monitoring, establishment of GIS/landscape level management, development of a plan for rare communities and species, and establishing biological inventories. Other changes included additional costs, data on snags and downed woody material, forest modeling for wood supply analysis, finance analysis, process for High Conservation Value Forests, planning timber sales revised, more attention to non-timber, post-harvest analysis, herbicide reduction plan, cultural resources

Table 1. Planning changes and number of responses per change from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number of responses
Alter inventory/documentation procedures	26
Establish/update management plan	16
Revised harvest planning	11
Data/Plan for rare/special communities	9
Landscape level mngt. Implementation	8
Increased level of monitoring	8
Establish/update stakeholder processes	7
Establish/update biological inventory	6
More attention to non-timber resources	5
Post harvest analysis alterations	4
Cultural resource documentation	3
Data on snags/downed woody material	2
Development of forest modeling for wood supply	2
Quantification of existing conditions	2
Silvicultural/stand management improvements	2
Additional employment	2
Herbicide reduction plan	2
Uneven aged management addition	2
Elimination of GMO trials	2
Planning timber sales revised	1
Additional costs	1
Analysis of finances	1

documentation, uneven aged management, dropping GMO plans, additional employment necessary, quantification of existing conditions, and silvicultural/ stand management improvements. These changes were then grouped into three major categories. These included: forest management process alterations, increased management comprehension, and administrative changes. Table 2 shows these three categories along with their associated changes and frequencies.

The management process category included changes in basic management planning activities such as altering inventory or documentation procedures. One respondent indicated that the organization is implementing "more detail on maps, especially the marking of wetlands and reserves". Another indicated the organization is "implementing an ecological classification system into mapping and planning". This suggests that certification changes how forest management entities conduct forest planning. The increased comprehension category included changes that have broadened the scope of management planning by the organization. For example, seven organizations previously had no stakeholder processes before becoming certified, and six previously had no biological inventory. This suggests that certification is broadening the scope of forest planning to include a wider variety of ecological and social considerations. The final category included administrative changes having to do with employment, finances, and costs. This demonstrates changes that are most likely the direct result of the other two categories, process and comprehension changes.

Table 2. Categorized land management planning changes and response frequencies (freq.) from a survey conducted of FSC certified land managers in North America, 2002.

Management Process	Freq.	Increased Comprehension	Freq.	Administrative	Freq.
Alter inventory/documentation procedures	26	Data on rare/special communities	9	Additional Employment	2
Establish/update management plan	16	Landscape level management	8	Additional costs	1
Revised harvest planning	11	Establish stakeholder process	7	Timber sales revised	1
Increased monitoring	8	Biological inventory	6		
Post harvest analysis	4	More attention to non-timber products	5		
Forest modeling for wood supply	2	Process for High Conservation Value Forests (HCVF's)	3		
Herbicide reduction plan	2	Cultural resources documentation	3		
Elimination of GMO trials	2	Uneven aged management addition	2		
Silvicultural stand management improvements	2	Data on snags/downed woody material	2		
		Quantification of existing conditions	2		

In summary, it is apparent that the majority of planning changes occurred in the two areas of management process and increased comprehension. The three most frequent responses, establishing/updating management plans and altering inventory, documentation procedures, and revised harvest planning fell into the management process category. Likewise, the increased comprehension category received a large distribution of responses. The least number of changes and responses fell into the administrative category, whose changes are most likely resultant of the planning changes in the other two categories. As previously noted, additional costs, finance analysis, revised timber sales, and additional employment probably occurred as a direct result of changes associated with management procedures and increased comprehension. For example, one change listed in the comprehension category is “biological inventory”. In accordance with this change, one respondent stated “additional employment” as a change and elaborates with, “We had to hire a wildlife biologist”. Consequently, the two dominant themes that surface due to responses in the area of planning changes are that FSC certification changes organizations' management processes and broadens the scope of that management.

Land management practices

The following discussion (Section 1.2 of questionnaire) addresses changes in land management practices due to certification. Land management practices include any in-field changes that the organization has made as a result of certification. For example, practice changes may include changes in chemical usage, forest products utilization, altered silvicultural regimes, wildlife and/or water quality management, or new forest

management practices. Participant responses were sought through two questions. First, what were the three most significant land management practice changes, and second, what was the relative amount of resources necessary for each change. A total of 37 participants indicated a most significant change. The average amount of resources utilized for the first most significant changes was 1.84, meaning that moderate resources were consumed for this change. Change two received an average of 1.83 with 24 participants and change three received an average of 2.0 with 17 respondents. Both change two and three consumed moderate resources. Table 3 illustrates land management practice changes noted by respondents. The most common answers include measuring/documenting snags, cavity trees; BMP/SMZ identification, increased focus on silviculture, increased monitoring of roads, and using new chemical restriction.

The number of respondents in this category of land management practices changes also decreased from the first most significant change to the third. The first change received 37 responses, the second 24, and third 17. Thus, some participants only experienced one or two changes. Furthermore, changes in land management practices were almost half as prevalent as those in land management planning. This has a couple possible explanations. First, it may actually mean, as much of the literature states, that many changes due to certification occur in the area of planning. Second, it may mean that these two types of changes (planning and practices) are hard for forest managers to distinguish between and are actually not mutually exclusive.

Table 3. Land management changes and number of responses per change from a survey conducted of FSC certified land managers in North American, 2002.

Response	Number of responses
Measuring/Documenting snags & cavity trees	7
Chemical Restrictions	7
BMP/SMZ management	6
Increased focus on silvicultural management	6
Increased monitoring of roads, landings, slash	6
Attention to harvest around sensitive areas	4
Increased monitoring of logging operations	3
Management for non-traditional forest resources	2
More exotic control	2
Leaving trees in clearcuts	2
Increased water quality management	2
Data collection increased in the field	2
Introducing prescribed fire	1
Planned harvest volumes per species group	1
Field people not used to documentation	1
Establishment of procurement road	1
Time and materials	1
Designation of full-cycle trees (never cut)	1
More emphasis to uneven aged mngt.	1
Site treatment documentation	1
More attention to state guidelines	1
No more container seedlings	1
Increased annual cut (increased seral stage species)	1
Reduction in harvest rate	1
Increased use of land classification systems	1
Keeping waste in safe/adequate places	1
More rigorous regeneration surveys	1
More rigorous post-harvest surveys	1
Already meeting field requirements vs. planning	1
Development of operating procedures manual	1
Development of white pine strategy	1
Manages changing mentalities	1

Another difference in this category of changes compared to planning changes is the relation between most significant change and resources consumed. The first two most significant changes had almost the same averages for resources consumed at 1.84 and 1.83 (on a scale of 1 to 3, 1=little or no resources, 2=moderate resources, and 3=significant resources). However, the least most significant change received an average of 2.0 in resources consumed. Thus, organizations did not directly correlate most significant change with most resources consumed in the area of land management practices changes. Therefore, it can be assumed that there are other reasons beside resources consumed that relate to why a change is significant to an organization.

Land management changes were also grouped according to the following two major categories: ecological/environmental considerations and silvicultural modifications (Table 4). The most prevalent responses and the highest overall number of responses occurred in the category of ecological changes. The category of silvicultural changes had the most diverse responses but the lowest frequencies of responses per change as compared to the other two categories. From this, it may be concluded that many of the 'changes' in the silvicultural category were already being practiced by organizations, and, for many, were not changes. On the other hand, the areas of management including ecological changes were probably less widely observed in management regimes and had to be implemented as conditions of certification. For example, one respondent states "We actually need to increase the annual harvest for a number of years in order to better arrange our age classes and capture many trees in the seral stages". Another states that the organization had to identify "water course buffers and develop new silvicultural management practices for these areas". This category also includes such practices as

Table 4. Categorized land management practice changes and response frequencies (freq.) from a survey conducted of FSC certified land managers in North America, 2002.

<u>Ecological changes</u>	Freq.	<u>Process or silvicultural changes</u>	Freq.
Water quality management/BMP/S MZ	8	Increased focus on silvicultural management	6
Chemical restrictions	7	Increased cruising	2
Measuring/documenting snags, cavity trees, downed woody material	7	Leave more trees in clearcuts	2
Increased monitoring of roads, landings	6	More rigorous regeneration and post-harvest surveys	2
Attention to harvest around sensitive areas	4	Increased annual cut	1
Leaving more trees in clearcuts	3	Development of operating procedures manual	1
More control of exotic species	2	Development of white pine strategy	1
Management of non-traditional forest products	2	Introduction of prescribed fire	1
Keeping waste in safe and adequate places	1	Planned harvest volumes per species group	1
Increased use of land classification systems	1	Establish of procurement road	1
Managers' changing mentalities	1	Increased emphasis on uneven aged management	1
		Site treatment documentation	1
		No more container seedlings	1
		Reduction in harvest rate	1

chemical restriction or elimination plans and implementing inventory of wildlife resources including snags, cavity trees, and downed woody material (Table 4).

The goals and benefits of FSC Certification

The results regarding goals and benefits of certification are from the second major section of the survey. Results discussion begins below with organizations' goals for certification followed by the benefits they received from becoming FSC certified.

Goals of certification and their achievement

Participants were asked to describe their organization's three most important goals for seeking certification (Section 2.1 of the questionnaire). They were asked to record them in a hierarchical manner with one being the most important and three being the least important. Participants were also asked to rate the degree each goal was achieved on a scale of 1 to 5, with 1 being not achieved at all and 5 being very much achieved. The average degree of achievement for the most important goal (63 respondents) was 3.35 or slightly more than moderate degree of achievement. The second most important goal received 61 responses and an average of 2.70 meaning that goal achievement was slightly below moderate. The final most important goal for certification received 57 responses and an average achievement rating of 2.93. This demonstrated that the participants were a little above a moderate degree of achievement in accomplishing their third most important goal.

The most commonly noted most important goal for each organization also held the highest degree of achievement on average. The number of responses decreases from the most important goal to the least important goal, meaning that not all organizations held three important goals for certification. Although the most important goal had the

highest degree of achievement, the least important goal held the second highest degree of achievement.

For the described goals, 14 major categories were observed, developed, and analyzed. These major categories of goals include: Market benefits (price premiums and increased market access), Recognition/Credibility (for exemplary forest practices), Promotion of good forestry (locally, regionally, and/or globally), Improved forest management, Verification of good forestry, Independent assessment value, Improved external relations, Certification education, Model of good forestry, Less legal interference, Community impacts/importance to community, Required/asked for by clients, Pride (in one's organization), and Acknowledgement by environmental community. Table 5 displays these goals, along with the number of responses each received.

Table 5. Goal categories, responses, and average degree of achievement for FSC certification from a survey of FSC certified land managers in North America, 2002.

Goal	Responses	Average degree of achievement
Market benefits	46	2.14
Recognition/Credibility	26	3.04
Promotion of good forestry	17	3.25
Improved forest management	16	3.33
Verification of good forestry	13	4
Independent assessment value	10	4.17
Improved external relations	9	3.64
Certification education	8	3.8
Model of good forestry	7	3.33
Less legal interference	6	3
Community impacts/importance to community	3	4
Required, asked for by clients	3	2
Pride	2	2.5
Acknowledgment by environmental community	2	2.5

Total respondents were also grouped according to whether they were of a profit or non-profit organization. This was done in order to compare and contrast the two types of entities according to the types of goals they expressed. Table 6 illustrates differences between for profit and non- profit organizations for each goal and the percentage of total goal responses allocated toward each goal. For example, for the goal of market benefits, 33.9% of all goal responses for profit entities named market benefits as a goal. This contrasts with 10.6% of all non-profit goal responses listing market benefits as a goal for seeking certification. The difference between the two percentages is 23.3%, which is also illustrated in Table 6. Those with the largest differences include the goals of verification, model of good forestry, improved forest management, certification education, and market benefits. These goals, their associated category, and difference percentage are in bold and italics in Table 6.

Table 6. Organization goals, percentages of goals according to profit or non-profit status, and percentage differences for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.

Goal	For-profit (%)	Non-profit (%)	Difference (%)
<i>Market benefits</i>	33.9	10.5	23.4
Recognition/Credibility	15.7	14.9	0.8
Promotion of good forestry	9.9	10.6	0.7
<i>Improved forest management</i>	7.4	14.9	7.5
<i>Verification of good forestry</i>	5.8	12.8	7
Independent assessment value	5.8	5.3	0.5
Improved external relations	5	6.4	1.4
<i>Certification education</i>	3.3	8.5	5.2
<i>Model of good forestry</i>	1.7	10.6	8.9
Less legal interference	4	4.3	0.3
Community impacts/importance to community	1.7	1.2	0.5
Required, asked for by clients	2.5	0	2.5
Enhanced pride	1.6	0	1.6
Acknowledgment by environmental community	1.7	0	1.7
Total (%)	100	100	

The reason for categorizing these organizations was to observe whether there were differences in goals held by profit and non-profit entities. Accordingly, Table 6 illustrates that there were some differences in responses related to stated goals. The goals of verification of good forestry, model of good forestry, certification education, market benefits, and improved forest management all percentage differences greater than 5%. Furthermore, these differences related to a greater amount of responses for non-profit entities in 4 out of 5 goals: verification of good forestry, model of good forestry, improved forest management, and certification education. The only goal for which for-profit organizations had a higher percentage of responses than non-profits was that of market benefits. These results are not surprising given that for-profit organizations have greater motive for desiring market or monetary benefits than non-profits do. Furthermore, all non-profit organizations included state or local forest agencies, university forests, or educational conservation forestlands. Logically, their goals were more oriented around verification of good forestry, being a model of good forestry, improving forest management, and becoming more educated on a new forest policy tool like certification. All other goals besides the five listed above were very similar in percentages of responses from both types of organizations.

The year certification was granted was the other category tested to determine if organizational goals varied. Early certifiers were defined as those certified between 1993 and 1998, and late certifiers were defined as those certified between 1999 and 2002. Table 7 portrays differences among goals according to if the organization was early or

Table 7. Organization goals, percentages according to early or late certification, and differences between percentages for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.

Goal	Early certified (%)	Late certified (%)	Differences (%)
Market benefits	33.3	36.2	2.9
Recognition/Credibility	11.7	11.5	0.2
<i>Promotion of good forestry</i>	5	12.3	7.3
Improved forest management	6.7	10	3.3
Verification of good forestry	5	7.7	2.7
Independent assessment value	6.7	3.8	2.9
<i>Improved external relations</i>	13.3	4.6	8.7
<i>Certification education</i>	0	4	4
Model of good forestry	3.3	5.4	2.1
<i>Less legal interference</i>	6.7	0	6.7
Community impacts/importance to community	1.7	1.5	0.2
Required, asked for by clients	1.6	1.5	0.1
<i>Enhanced pride</i>	5	0	5
Acknowledgment by environmental community	0	1.5	1.5
Total (%)	100	100	

late certified. The largest differences occurred for the goals of promoting good forestry, less legal interference, improved external relations, pride, and certification education

The same procedure was used in assessing whether there were differences in goals between early and late certified organizations. In this instance, the largest differences in percentages occurred for the goals of promoting good forestry, less legal interference, improved external relations, enhanced pride, and certification education. Those organizations, which were certified later, (1999-2002), held higher percentages of responses for the goals of promotion of good forestry and certification education than did early certified entities (1993-1998). However, those certified earlier held higher percentages of responses for the goals of less legal interference, improved external relations, and pride. These trends are expected as certification arose during a time when many forest management practices were being questioned and certification appeared an

appropriate tool for many to avoid legal interference and improve external relations.

Furthermore, late-certified entities most likely wanted to educate themselves on certification after observing its rapid expansion in North America and abroad.

Potential benefits of certification

Section 2.2 of the questionnaire addressed the potential benefits of certification. Participants were asked about potential benefits that have been documented in certification literature. These include enhanced credibility, improved sense of pride, improved external relations, improved economic or market benefits, and the validation of a forest management plan or practices. Respondents were asked to indicate the importance to their organization of each of these potential benefits, with 1 being not important and 5 being very important. They were then asked to circle the degree to which the benefit had been realized on a scale of 1 to 5 with 1 being not realized and 5 being very much realized. Table 8 illustrates each of these benefits' importance to the organization and each relative degree of achievement.

The first benefit was enhanced credibility, and it received 69 responses and an average of 3.84, meaning that credibility was of moderately high importance. Sixty-three

Table 8. Potential benefits of certification, importance to organization, and degree of achievement of certification benefits for FSC certified land managers from a survey of FSC certified land managers in North America, 2002.

<i>Potential Benefit</i>	<i>Importance to organization</i>	<i>Degree realized to organization</i>
Enhanced credibility	3.84	3.14
Improved sense of pride	3.38	3.29
Improved external relations	3.62	3.02
Market benefits	3.85	1.71
Validation of mnegt. plan	4.13	3.6

organizations responded that this ‘credibility’ goal was achieved at a moderate (3.14/5) level. The next benefit was that of pride to the organization as a result of being certified. Total responses for this question were 65 with an average of 3.38 indicating a moderately high degree of importance to them. Sixty-one responses were given for the degree realized to organizations. The average achievement was 3.29 meaning that the goal of pride was a little above a moderate degree of achievement. The next benefit in question was that of external relations, receiving 66 responses and an average of 3.62 meaning it was a moderately high goal in importance to the organizations. Sixty-one responses were given for the degree realized to organizations, with an average of 3.02, meaning that it was a little over moderately achieved. For the goal of market benefits, 67 responses were given and an average of 3.85 meaning this goal was at the high end of moderately important to the organizations. On the other hand, with 63 responses and an average of 1.71 this goal was on the low end of the achievement spectrum. The final benefit was that of validation of management plan or practices. This question received a total of 67 responses and had the largest average for importance to the organization at 4.13. Similarly, it also had the largest average in goal achievement at 3.60 with 63 responses.

Table 8 illustrates some important points concerning certification benefits and their achievement. Firstly, every benefit was on average given a higher level of importance value in comparison to its average degree of realization. Secondly, the second most important goal (market benefits at 3.85) held the lowest average in realization for the organizations (1.71). Finally, the most important goal (validation of forest management plan at 4.13) also held the highest average value of goal realization at 3.60.

Additional benefits from certification

Participants were also asked to identify benefits of certification they have experienced in addition to those from Table 8. Here, participants were asked to describe any additional benefits of certification that were not anticipated but were observed. The responses in this part included the realized benefits of improved external relations, opportunity to look at organization practices/policies, being able to leverage funds from private foundations to explore marketing options, easier to get ISO 14001 certification, a sustainable forest, better control of manufacturing processes, more efficiency, lots of publicity, new clients, financial audit equivalent benefits, and allowing forest managers to see the importance of conservation/preservation vs. just business. Table 9 displays these benefits and the number of responses for each.

Table 9 reinstates the importance of external relations as a benefit of certification.

Table 9. Additional benefits for land managers from FSC certification and number of responses per benefit from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number
Improved external relations	7
Increased publicity	3
Opportunity to look at practices	3
Able to leverage private funds to explore marketing options	1
Easier to obtain ISO 14001 certification	1
A sustainable forest	1
Chain of custody=better control of manufacturing processes	1
More efficiency	1
New clients	1
Able to see importance of conservation	1

It also gives added emphasis to the benefits of enhanced credibility or increased publicity and validation of forest management plan or opportunity to look at practices. The lack of overall responses for the additional benefits category and lack of diversity from the previous categories most likely means that the major categories of benefits were inquired about in the previous section on potential benefits of certification.

Overall experiences with FSC certification: costs, benefits, and impacts

The final section of the survey (Section 3) concerned organizations' overall experiences with FSC certification. This included the costs, benefits, and other impacts of FSC certification to forest management organizations.

Implementation costs

The first question asked for the respondents' opinion on implementation costs due to certification. These are costs that organizations endure in order to comply with certification standards, and they include costs paid for changes in land management planning and practices. Participants were asked what type of implementation costs their organization had experienced due to certification. Respondents indicated that their costs: remained the same (11 responses); increased 1-5 percent (14 responses); increased 6-10 percent (15 responses); increased 11-15 percent (9 responses); increased 16-20 percent (4 responses); or decreased (0 responses). These increases in management costs due to implementation of certification are most likely the result of the many changes in planning and practices listed and assessed from the first two sections. It is also important to note the low average of market benefit realization as a goal in comparison to the increases in management costs due to certification.

Uncertainty surrounding benefits, costs, and impacts

Managers were asked to explain and rate their certainty pertaining to certification's costs, benefits, and impacts. Because it is a new forest management tool, certification has produced much ambiguity surrounding its various characteristics. Thus, managers often cite difficulty and confusion concerning its impact on them and how they perceive certification's benefits and costs. Therefore, participants were asked to indicate the degree of certainty they have regarding certification's benefits, costs, and impacts (using a scale of 1 to 5, with 1 being very unclear and 5 being very clear). Certification benefits received 63 responses and an average of 3.06; this indicated a slightly moderate degree of certainty surrounding the benefits of certification. They were then asked to explain why they rated their certainty as they did. Explanations were categorized and included in Table 10. For benefit certainty, the most common answers were it will take more time to realize benefits, real economic benefits are not realized, there are clearly no benefits, recognition/credibility benefits are widespread, and future benefits are unclear. Answers regarding certification benefits varied greatly. Respondents indicated that certification benefits were uncertain because of the lack of time certification has existed, others believed benefits were certain and unchanging, and others listed the benefits that were clear to them presently. Dominant themes that emerge from these responses are that certification is still a new tool and we can't be certain of the benefits that may be realized in the future. On the other hand, some were certain that the limited number of benefits observed currently are clear and that these will be the only ones to emerge, presenting a

Table 10. Uncertainty responses surrounding certification benefits and number of responses per benefit from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number
It will take more time to realized benefits	9
Real economic benefits not realized	6
Clearly no benefits	5
Recognition/credibility benefits are widespread	5
Future benefits are unclear	4
Obtained/retained clients b/c of certification	3
Very limited market access	3
Long term benefits are to future generations	3
Too many programs make it unclear	2
Third party verification is a benefit	1
Diminishing returns relative to costs	1
Uncertain for small timberland owners	1
Minimal results are evident	1
US marketplace doesn't recognized FSC	1
Fairly clear benefits	1
Development of a new forest management plan	1
More demand when market is tight	1
Certification offers a more sure market	1
Significant positive benefits w/ customer relations	1
Long term benefit is to future generations	1
Benefits are positive mngt. Adjustments	1
Clear positive improvements in mngt.	1
Pride, staff morale	1
Program now a model for others	1

rather dismal view of certification's future. Sixty-three participants rated their certainty pertaining to certification costs. The average answer for cost certainty was 3.37, indicating that respondents were slightly more than moderately sure of what certification's costs meant for their organization. Participants were asked to explain their cost certainty and their answers were categorized and are included in Table 11. The most common answers were that it is clear that certification means extra costs, costs of certification are high, costs are clear except internal costs to meet conditions, both time and dollars are clear, and costs are uncertain for the future.

Table 11 demonstrates that costs are a major area of concern for certified organizations. The most frequent response was that costs are high for certification. Other significant answers were that implementation costs are unclear, but audit time and dollars were clear. This suggests that the direct costs of certification are certain while the indirect costs, or the costs relating to adhering to conditions of certification are unclear.

Table 11. Uncertainty responses surrounding certification costs and number of responses from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number
Costs are high for certification	13
Internal costs of meeting conditions are unclear	8
Both audit time and dollars are clear	8
Future costs are uncertain	7
Costs were subsidized but were still high	4
Costs are unclear for certification	3
Clear that certification=extra costs	3
Additional costs=forgone income potential	2
Costs are disguised	2
Costs are very high for small parcels	2
Costs will be small relative to future benefits	1
Hard to isolate, some costs would have occurred anyway	1
Unclear future costs relative to changing criteria	1

The future costs of certification was another major area of uncertainty in this category. Future costs can include implementation costs as describe above or the future costs relating to additional audits and/or changing standards or conditions. An interesting answer was that although certification was subsidized, the costs were still high. In short, the costs of certification are not limited to monetary expenditures; rather, there are other costs such as time and resource allocations that are very significant as well.

In the last part of this section respondents were asked for their view of certification impacts. Table 12 illustrates the responses to this question. The most common answers were that it is too early to tell, impacts are unclear because of limited public knowledge, impacts are unclear because they're still waiting for markets to develop, impacts are elevated pride and prestige, impacts are mostly social oriented, there are little or no impacts, the impacts are clear in terms of costs and procedures, and impacts are questionable because of unclear viability associated with the lack of observed benefits. Concerning impact certainty, frequent responses include that it is too early to tell what the impacts will be, also a common response in the previous two sections. Many participants also state that impacts have been little or none. Interestingly, one of the highest responses for this category include that certification's impacts are mostly social in nature, this most likely relating to enhanced external relations and credibility benefits for the organizations.

Cost-benefit comparison of certification

Participants were also asked to compare overall costs and benefits of certification to their organization by circling one of five statements that best related to their overall comparison of certification's costs and benefits. There were 63 responses to this

Table 12. Uncertainty responses surrounding certification impacts and number of responses from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number
Too early to tell	11
Impacts are little or none	5
Impacts are mostly social	4
Impacts unclear, may be only pride/prestige	2
Clear impacts: new costs and procedures	2
Questions a/b viability relative to lack of benefits	2
Unclear b/c of limited public knowledge	2
Unclear b/c still waiting for markets to develop	2
Unclear in FSC benefits over other schemes	1
Impacts are clear especially in fifth year of certification	1
Impacts are very document and monitoring oriented	1
Impacts include standardization of mngt. Processes	1
Some impact aren't quantifiable like public perception	1
Impacts are clearly the conditions that have to be met	1
New standards for FSC look unpromising	1
Impacts include forcing rest of industry to improve practices	1
Impacts are clear: better mngt., more transparency	1
Clear on credibility, unclear on economic advantages	1
Impacts are positive	1

question. Respondents indicated: the benefits greatly outweigh the costs (6 responses), the benefits somewhat outweigh the costs (8 responses), the benefits and costs are about equal (7 responses), the benefits have yet to outweigh the costs but I believe they may in the future (28 responses), the benefits have yet to outweigh the costs and I do not foresee them doing so (14 responses). Thus, about two-thirds of FSC certified forest managers believe that the costs of certification currently outweigh the benefits.

General opinions on certification

Question 3.4 included a series of seven statements concerning certification. Participants were asked to indicate the degree of their agreement with each of the statements by circling the appropriate number on a scale of 1 to 5 (1=strongly agree, 2=somewhat agree, 3=unsure, 4=somewhat disagree, and 5=strongly disagree). Statements and respondents' degrees of agreement with each statement are listed in Table 13. These responses more clearly identify forest managers' opinions on certification. For example, the highest degrees of agreement fell among the statements of verifying good forest management, promoting good forestry globally, and certification increases credibility among stakeholders. The lowest degrees of agreement, which fell between respondents being unsure and disagreeing, were opinions on market benefits and that certification is an efficient process. This emphasizes the low degrees of achievement forest managers cite for market benefits and their prominent opinions on the high costs of the certification process. On average, respondents agreed with statements pertaining to certification increasing in importance and it becoming a normal part of doing business.

Table 13. Certification statements and average responses to statements from a survey conducted of FSC certified land managers in North America, 2002.

Statement	Average Response
Certification is an effective way to get independent verification of good forest management	1.75
Certification is the right thing to do because it promotes Regional and global forest stewardship	1.88
Certification is a way for my organization to gain credibility in the eyes of our stakeholders	2.09
Certification will continue to increase in importance	2.15
Certification will become a normal part of doing Business	2.33
The certification process, including scoping, auditing, And field assessments is a very efficient process	3.24
Certification is a market incentive and will improve my organization's profit and competitiveness in the long run	3.35

Overall worth of certification to organization

Question 3.5 addressed participants' opinion on the overall worth of certification. Specifically it asked, "Has certification been a worthwhile venture for your entity?" Participants were asked to indicate the degree to which certification has been a worthwhile venture for them. Respondents indicated the worthiness of certification as follows: not at all (3 responses), limited worth (15 responses), somewhat worthwhile (16 respondents), worthwhile (27 responses), and very worthwhile (6 responses). On average, this distribution illustrates that certification was of moderate worth to forest managers. However, approximately half of respondents indicated that certification was worthwhile while the other half indicated it was some degree less than worthwhile.

The reasons that respondents gave pertaining to their answers on certification's worth to their organization were categorized and are presented in Table 14. The most common explanations given were that it is of limited worth because net cost exceeds tangible benefits, worth will be noted with more time, it is of limited worth because it is not an economic incentive, and it is worthwhile because certification is a good external relations/credibility tool.

Will the organization re-certify?

The final question, 3.6, addressed re-certification. Forest managers who are FSC certified must renew their FSC certificate for forest management every five years. Hence, respondents were asked how certain they were that their organization would re-certify at its 5-year renewal date. Sixty-four responses were distributed as follows: I am certain we will not re-certify (1 response); We probably will not re-certify (4 responses); I am unsure if we will re-certify (25 responses); We probably will re-certify (15 responses); and I am certain we will re-certify (19 responses).

The average score was 3.73, meaning that the organizations were between being unsure they would re-certify and they probably would re-certify. Thus, answers indicated much ambiguity and hesitancy surrounding re-certification.

Participants were then asked to give explanations for the answer they chose. These reasons were categorized and are presented in Table 15. The most common explanations noted by respondents were that re-certification won't occur unless economics are favorable, organization will re-certify if costs aren't prohibitive, it is too early to tell if organization will re-certify, and re-certification will occur b/c of belief in certification intent/goals.

Table 14. Reasons for certification's worth and number of responses from a survey conducted of FSC certified land managers in North America, 2002.

Response	Number
Limited worth b/c net cost exceeds tangible benefits	16
Time will tell the worth of certification	8
Limited worth b/c of non-economic incentive	8
Worthwhile b/c of excellent public relations/credibility tool	7
Worthwhile b/c of third party verification tool	4
Worthwhile b/c of improved management	3
Worthwhile b/c of some economic benefits	3
Worthwhile b/c it differentiates among industry players	2
Very worthy for early adopters	2
Non-economic benefits of certification are worthwhile	2
Worthwhile b/c it increases competitiveness	1
Worthwhile b/c of alliance building	1
Worthwhile b/c public concerns are satisfied	1
Worthwhile b/c it allowed us to maintain market shares	1
Limited worth b/c of lack of legal relief	1
Worthwhile b/c planning improved	1
Difficulty being positive about certification	1
Worth in revised thinking about long-term goals	1
Very worthwhile if not so expensive	1
Worth b/c of broadened vision	1
Worth from personal satisfaction	1
Limited worth b/c too time consuming (paperwork,bureaucratic)	1
Worth results from better on the ground forestry	1
Worthwhile b/c of access to new clients	1
Worthy as a model for sustainable forest mngt.	1
Limited worth b/c of questions surrounding credibility of certification	1
Worthwhile b/c met goals at a reasonable cost	1
Worthwhile because of mechanism for continual improvement	1
Expected economic benefits make it not worthwhile	1

Table 15. Reasons for FSC re-certification and number of responses from land managers from a survey of FSC certified land managers in North America, 2002.

Response	Number
Re-certification won't occur unless economics are favorable	15
Organization will re-certify if costs aren't prohibitive	9
It is too early to tell if organization will re-certify	5
Re-certification will occur because of belief in certification intent/goals	5
Re-certification is uncertain b/c there are zero returns on investment	3
Re-certification depends on staff commitment and/or elected officials	2
Re-certification will occur for continual means of proving SFM	1
5-year renewal is uncertain	1
Re-certification looks unfavorable b/c of diminishing returns	1
Re-certification b/c it is useful /productive to management	1
Re-certification is required by an investor	1
Re-certification depends on new standards	1
Re-certification is certain b/c it will be required for maintaining market share	1
Re-certification depends on decreasing audit costs	1
It is foolish to get out of certification before allowing time for benefits to unveil	1
Re-certification will occur out of commitment to supply a product	1
Re-certification allows for continuing in an experiment with certification	1

Explaining respondents' answers on certification worth and re-certification

Ordinary Least Squares (OLS) regression was used to examine participant's opinions on the worth of certification. Participants ranked the worth of certification for their entity on a scale of 1 to 5 with 1 representing no worth and 5 representing very worthwhile. Results to this question were regressed on five independent variables: Credibility2 (degree of achievement for goal of enhanced credibility), econ2 (degree of achievement for goal of market benefits), Costs (implementation costs to organizations due to certification), recert (potential for organization to re-certify), and Org (type of organization, profit or non-profit) (Table 16). These results were derived from 45 observations. The p-value of the F-statistic was found to be <.001. The R-square for the results was 0.5339. The intercept and recert variable were found to be highly significant (alpha=0.05).

Table 16. Results of OLS regression on worth of certification from a survey of FSC certified forest managers in North America, 2002.

Results of OLS regression on worth of certification					
<i>Variable</i>	<i>Estimate</i>	<i>Standard Error</i>	<i>t-value</i>	<i>Adj. t-value</i>	<i>Pr > t</i>
Intercept**	1.88	0.48	3.95	4.1344957	0.0003
Credibility2	0.15	0.11	1.41	1.4054475	0.1671
econ2*	0.22	0.13	1.71	1.6365684	0.0949
Costs	0.01	0.08	0.23	0.2884712	0.8171
recert**	1.24	0.26	4.72	4.8105143	<.0001
Org	-0.18	0.28	-0.63	-0.789805	0.5331
* represents significant at alpha=0.10					
** represents significant at alpha=0.05					

The Econ2 variable (achievement of market benefits) was found to be significant at alpha=0.10. This suggests that the achievement of market benefits is a major factor influencing these land managers' opinions on certification worth. Furthermore, this finding is consistent with results that market benefits are important goals of land managers.

One important assumption of the basic OLS regression model is that the error terms in the regression equation have a common variance. If the errors do not have a constant variance then the errors are heteroskedastic (Maddala 2001). This violation of the basic model can significantly bias the regression results. A test for heteroskedasticity was conducted using White's Correction (White 1980). The adjusted t-value represents the t-value obtained after correcting for heteroskedasticity by dividing the parameter estimate by the square root of the covariance. No significant differences were found between the original and adjusted t-values; therefore, the effects of heteroskedasticity on the model results are insignificant. Another situation that can cause significant model

bias is when the explanatory variables are highly intercorrelated (Maddala 2001). This is known as multicollinearity. A visual inspection of the tolerance levels revealed that multicollinearity between variables was minimal and had no significant effects on the model results.

Logit model: re-certification

A binary logit model was used to predict the probability of a yes response to a hypothetical question pertaining to respondents' opinions on re-certification. The model predicted the probability that an organization would recertify. The probability of a yes response was regressed on six variables and the results of the model are presented in Table 17. The six variables included Credibility2 (degree of achievement for goal of enhanced credibility), econ2 (degree of achievement for goal of market benefits), mngplan2 (degree of achievement for goal of validation of management plan), costs (implementation costs to organizations due to certification), worth (how organizations ranked overall worth of certification), and org (type of organization, profit or non-profit).

Table 17. Results from a logit model predicting whether an entity will re-certify from a survey of FSC certified forest managers in North America, 2002.

Results: Logit Model				
Parameter	Estimate	Standard Error	Wald Chi-Sq	Pr>ChiSq
Intercept**	-6.95	2.61	7.09	0.0078
Credibility2	0.29	0.42	0.48	0.4874
econ2	-0.34	0.49	0.48	0.4881
mngplan2	0.60	0.44	1.88	0.1700
costs*	-0.62	0.35	3.25	0.0712
worth**	2.28	0.67	11.45	0.0007
Org	-1.20	1.29	0.87	0.3518
* represents significant at alpha=0.10				
** represents significant at alpha=0.05				

The Pearson Chi-Square p-value was found to be 0.7112, allowing the acceptance that the model is appropriate. In addition, the p-value for the Hosmer and Lemeshow Goodness-of-Fit test was found to be 0.5733, also supporting this conclusion. The p-value for the likelihood ratio was found to be $<.0001$. The intercept and worth variables were found to be highly significant ($\alpha=0.05$). The parameter estimate for worth (how worthwhile is certification) was 2.28. This can be interpreted as each unit increase in a respondents' answer to the worth question will increase the natural logarithm of the odds ratio of saying yes to re-certification by 2.28, assuming all other variables are held constant. The variable, costs (implementation costs of certification), was found to be significant at $\alpha=0.10$. The parameter estimate for costs was estimated as -0.62 which means that a 5% increase (one unit on the implementation costs rating scale) in forest management costs will decrease the natural logarithm of the odds ratio of saying yes to re-certification by .62. The predicted probability of a yes response in the model evaluated at the mean is .583. Or, based on the model, 58% of those organizations answering at the mean would be expected to re-certify.

These results indicate that organizations most likely to re-certify are those with the least implementation costs and, logically, those who rated certification as highly worthwhile to their organization. This trend translates to organizations, which have had to make little or no changes in forest management being certified. The goal of certification was to improve forest management or to 'raise the bar'. However, given these results certification may not be successful in the long run. What is necessary are the achievement of market benefits to offset implementation costs and/or a decrease in direct costs of certification, noted in respondents' opinions on the statement pertaining to

the efficiency of the process as well as opinions on their certainty of costs. One surprising aspect of the logistic model results is the insignificance of the econ2 variable or the achievement of market benefits in predicting whether an organization will say yes to re-certification. This may mean that the achievement of market benefits is the most desired goal due to the existence of implementation costs. Or, organizations may opt to re-certify if implementation costs were absent even if market benefits did not materialize.

CHAPTER 5.

Summary/Conclusions

The results demonstrate that FSC forest certification presents varying levels of costs, benefits, and impacts to the forest manager. Forest certification is broadening the scope of forest management to include a greater degree of ecological and social considerations, and it is resulting in greater attention to silvicultural or science-based forest management (Tables 2 and 3). This is evident from the land managers' responses detailing management changes with ecological, silvicultural, and social implications. Many managers of FSC certified forests now pay more attention to wildlife management, biodiversity consideration, water quality management, effects of chemical application, the need for stakeholder involvement, effects of management on the surrounding community, the need to preserve cultural resources, and the importance of non-timber forest products. The implications of this broadened focus included altering forest planning to include more detailed and vigorous inventory, documentation procedures, and forest monitoring. As noted by a couple surveyed managers, it was necessary for them to hire additional employees to help implement and carry out the changes in management. In addition, as also indicated by forest managers, they may have had to develop systems to incorporate these changes such as GIS and/or aerial photography to map a variety of resources.

These changes in planning and practices come with associated implementation costs. Depending on the amount of change necessary for certification, a management

entity may experience relatively small or large increases in overall management costs. Conversely, the general inelasticity of direct costs of certification put a relatively high financial burden on smaller organizations. For many forest management organizations in North America, these costs have not been offset by potential benefits of certification, nor have entities achieved their most valued goal for being certified, market benefits. Market benefits was the most frequently indicated goal expressed by managers for seeking certification and also had the second lowest degree of achievement. Other important goals for certification (enhanced credibility and improved forest management) held moderate degrees of achievement.

The one goal, which held the highest degree of achievement and had a significant number of responses, was that of certification being a good tool for independent assessment. The pursuit of an independent, third- party assessment of practices was expressed as managers' second most frequently stated goal and as their first most important potential benefit. This indication reveals that while market benefits is an important goal necessary to recover the costs of certification, many organizations' desire for an independent assessment or verification of practices was just as or perhaps more important. However, an independent assessment and verification of management is a benefit that may prove most useful only in the first few annual audits, after which only costs are incurred if market benefits still have not materialized. One respondent clearly explains this notion stating, " The initial impact was very positive and beneficial. We experienced continual improvements from annual audits to year five, after which the real benefits began to diminish, a clear case of diminishing returns relative to costs."

Analyzing responses on certification's overall worth and the potential of the organization to re-certify illustrated important factors pertaining to certification. The achievement of market benefits was estimated to be a significant variable explaining the respondents' opinions on the worth of certification. It was also found that re-certification was highly correlated with how respondents rated worth, and with the degree that implementation costs accrued. So, both the achievement of market benefits and the increases in management costs of an organization play major roles in how managers view the worth of certification and whether they will make the decision to re-certify.

The limited demand of final consumers and the limited retail supply of certified wood is a major barrier in the creation of market benefits. Forest managers are hesitant to certify with the very limited demand signals and wood buyers are hesitant to pledge support for a limited supply of certified wood. However, certification has witnessed rapid progression as a forest management tool since its inception nearly a decade ago. This is apparent from the large acreages of certified forests throughout the world and the small number of market success stories. Much of this success has occurred because of the tremendous NGO influence on the forest products retail sector. The effects of this influence have left a retail industry highly subject to intense environmental and social accountability. Certification, and in particular FSC certification, has been used as a major tool by retail giants such as Lowes and Home Depot to provide this need for increased accountability and increase and maintain their credibility to civil society (Eris 2000). For example, "as recently as 1991 B&Q had no proper information about where its timber was coming from, let alone how it was produced" (Knight 2002). As a major retail wood products' player in the UK, B&Q became susceptible to public scrutiny

surrounding tropical wood purchases. Therefore, they decided to pledge preference for FSC certified products and are happy with the commercial aspects of this decision (Knight 2002). Similar situations occurred in the US impacting Home Depot, Lowes, and other forest product retail centers.

The influence of NGO's on corporate policy has become quite significant. To the extent that NGO's (along with other forest stakeholders) birthed FSC certification, they have been able to change forest management, as evident by this research. Thus, FSC has been successful in its goals of broadening the scope of forest management and making it more accountable to a more diverse group of interests. The respondents to this survey have also indicated that *their* interests appear to be less well served by certification. The certification goals that might most serve land management interests (market benefits and recognition and credibility) were achieved with low to moderate degrees of achievement (2.14 and 3.25 respectively out of 5).

According to this and other research, "ultimately, the goal of certification processes must be to provide a means for consumers to more precisely express their tastes, preferences, and values in the marketplace" (Kiker and Putz 1997). While this is currently not translating into price premiums, it does present the opportunity for organizations to increase market access due to a differentiated timber product, which has the potential to increase profits. One respondent successful in the pursuit of market benefits states that certification has been great public relations and that "certified sales are now about 20-30% of sales". Another positive example includes "I have, in less than one year of certification, examples of having increased market share selling some products (not including monetary value/unit but increased demand when market was tight), and

having retained new clients in part due to certification". Certified products differentiate themselves from non-certified product by offering assurances at the forest stand level. In essence, "to the degree that consumers are willing to pay a higher price for the certified product, the timbering firm will receive high per unit revenues for their timber" (Kiker and Putz 1997). Depending on the changes in forest management the firm had to make to become certified the subsequent implementation costs may reward them with higher per unit revenues.

To the extent that FSC certified wood will represent a large portion of total wood supply, a much greater number of forest managers must seek certification. For this to occur, end consumer demand must surface, and when producers interpret this increase in demand the supply of certified wood will increase. In explaining the lack of demand one respondent writes that "Its not well known in the general public what certification means, until demand because of knowledge is increased, the benefits are minimal." Furthermore, much of the existing evidence of market benefits surrounding FSC certification is much less apparent at the forest level. The pressure to use certified wood products is at the retail end of the wood products supply channel. If this pressure continues, it will eventually work its way down the supply channel, but this may take time and remains uncertain. Some management entities, which are more vertically integrated, have felt this pressure more directly than non-integrated companies (Gereffi, Johnson, and Sasser 2001).

This research demonstrates there is much uncertainty among forest managers due to the financial requirements of certification and uncertain or absent market benefits. Given that forest certification is a voluntary, non-regulatory policy mechanism, "can the

market institutions transmit consumers' willingness to pay for the service flows in monetary terms?" (Kiker and Putz 1997). The current lack of price signals corresponds with managers' uncertainty surrounding certification's worth to their organizations as well as their willingness to re-certify. Simultaneously, this research has shown that external benefits sought by NGO's through FSC certification are being realized. Many certified forest management organizations are becoming more ecologically and socially attune, both in terms of management planning and in terms of in-field or performance based measures. However, if these external benefits are to continue, the internal benefits to the forest management firms seeking certification must begin to materialize.

Conclusions

In its evolution the Forest Stewardship Council has put considerable emphasis on the development of a certification system that is credible to forest managers, retailers, and civic society. Its credibility largely rests upon its principles and standards and their relative application in the certification process. The results of this research suggest that this emphasis has paid off. The FSC certification system is producing forest management that is more comprehensive and therefore consistent with its principles and standards, and it is a good independent assessment tool for managers to verify good forest management.

The FSC is currently pursuing a marketing initiative to increase market benefits and public image. Likewise, this research concludes that this area of marketing is justifiably a most pressing area of concern in regards to the future of forest certification. Certification presents a way for forest management organizations to differentiate themselves in the wood products market. While marketing is currently presenting itself as the most difficult aspect of certification's success it is also the most promising.

Environmental attributes of consumer products in general are becoming very important among the buying public. One example is the organic foods market. Food products certified as organic are increasingly prevalent and are marketed as having both environmental and health benefits. Certified wood products have the potential to be marketed in similar ways. First, there are the most obvious benefits dealing with environmental, ecological, and silvicultural benefits to forests including: wildlife, water quality, and biodiversity. Second, certified products have standards regarding social impacts of timber production and harvesting. The rights of indigenous peoples and the well-being and sustainability of communities are important issues currently, and FSC certification includes the protection of both within its standards for well-managed forests. Finally, sustainability is a very significant issue both on local and global levels. FSC certified forest must seek to balance the three goals of economic, social, and environmental management. These three goals are included in the most common definitions of what sustainable development is. Hence, certified wood products can be marketed as aiding in the pursuit of sustainable forest management. Product differentiation is the most important way to sell products and logically the most significant aspect of marketing. Furthermore, FSC certified products have multiple attributes that lend themselves perfectly to product differentiation and thus to successful marketing campaigns.

Further questions to be addressed

The area of marketing and enhanced consumer awareness of certification is probably the most crucial determinant of certification's future. Thus, this area deserves more research from those trying to promote market benefits from certification and thus,

increase FSC certified acreage. Questions such as where and to whom it is best to focus marketing activities need to be answered so that time and money is most efficiently allocated in certified wood promotion. At the consumer level, ENGO's may try to work with retailers, FSC, and certifiers in order to advance certified products. Magazine articles, posters in large retail stores, commercials are ways in which this goal of consumer awareness might be met. Government may also play an important role in this aspect with funds to help pay for the marketing of certified products. Tax breaks and other monetary incentives are further ways that government can play an important role. Tax breaks granted by government, both in terms of certified forests and for building with certified wood, could be used to generate more of the market incentive intended for certified products. Finally, there may also be some limited opportunity for government involvement especially at the level of forest practices regulation. It may be possible for forest regulations and ordinances to recognize FSC certified forests as adhering to certain standards within those because of their certification status.

Lastly, one important advancement (with great potential for generating market demand for certified wood), that could be explored and promoted, is the Leadership in Energy and Environmental Design (LEED) program of the US Green Building Council. This program has led to a "definite surge in the specification of FSC certified wood for use in commercial construction projects" (FSC 2003). The program offers credits for various types of green building considerations in construction such as energy efficiency, water efficiency, sustainable materials use, and indoor environmental quality design. One category that generates credits is now the utilization of FSC certified wood products. The benefits of the LEED program and having a building specified as 'green' include

gaining a corporate environmental responsibility image and receiving government incentives for green building. Already, this program has resulted in construction companies calling their suppliers and asking for certified wood. This has led to these suppliers seeking Chain of Custody (COC) FSC certification and, hence, certified wood from their suppliers. The potential of the program in generating market demand for certified wood is great. Furthermore, both the private and the public sectors can play large roles in advocating for green building, especially the LEED program because it is already in place and has experienced success. Public institutions can be altered to offer incentive to build with LEED specifications. Private entities can use LEED and other green building mechanisms as ways to differentiate themselves against their competitors. At a time when development, especially urban development, is usually always opposed by various groups, green building may offer ways for builders and planners to compromise with those not in favor of development.

Since this study began FSC has certified 21 more forest management organizations. However, there have also been some significant losses in certified acreage because of managers not re-certifying and/or terminating their certificates due to the many reasons reported by managers in this study. As a voluntary tool, certification must in the long run address the interests and needs of land managers, as well as those of society seeking credible sources of wood.

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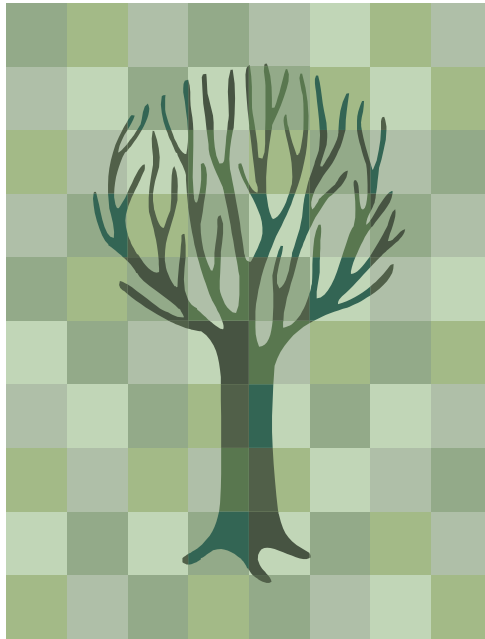
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Appendix



FSC Forest Certification in North America: From the Perspective of Forest Managers

We Need Your Help!!!

Our Intent

With your help, our intent is to unveil important impacts of FSC forest certification on forest management organizations in North America. Forest certification is relatively new and little objective information is currently available that captures the **perspective of organizations that have been certified**. As FSC certification increases in significance worldwide the experiences of certified forest management entities need to be more widely available. We are surveying all organizations in North America that have been FSC certified regarding forest management. The information generated by this study will be helpful to entities already certified or considering certification and to a breadth of certification practitioners and stakeholders. This survey has been reviewed by a number of certification interests including: FSC, Scientific Certification Systems (SCS), Smartwood, and others.

This survey is intended to be completed by someone in your organization who is familiar with the impacts, benefits and costs, that have resulted from FSC certification. If you do not feel comfortable providing this information, please pass the survey on to someone who is more familiar with FSC certification and willing to participate. The time necessary to complete the survey is approximately 10-15 minutes.

All information resulting from this survey will be kept anonymous. The identification number of the questionnaire is for mailing purposes only. It is used to remove your organization from our secondary contact list once you have responded. Your agreement to participate in this survey is assumed by your completion of this survey.

Thank you in advance for your time and cooperation. Check here _____ if you would like a copy of the results of this study.

Sincerely,

Angela Hartsfield
Graduate Research Assistant

and

Dr. David Ostermeier
Professor

We are seeking information regarding the impacts of FSC forest certification on your forest management entity. There are three sections in this survey: 1.) Land management changes, 2.) Benefits that your entity has experienced as a result of certification and 3.) Your overall experience with FSC certification: costs, benefits, and impacts. This survey will be best completed by someone with knowledge about the certification process and how certification has impacted forest management and your organization.

Introduction

I. Please indicate your position:

II. Please briefly describe your organization (corporation, family owned business, timber investment organization, government agency....)

III. When was your organization FSC certified for forest management?

IV. What was your role in the certification process?

Section 1: Land Management Changes

This section addresses changes in forest management planning and practices as a result of certification.

1.1 Land Management **Planning** Changes

If your entity **did not** experience change in land management planning as a result of certification please proceed to question 1.2.

Please describe the three most significant changes in land management planning that your organization has made or will make as a result of certification. These may include **what** you plan, document, and monitor as well as **how** you plan, document, and monitor. In addition, please indicate the amount of resources necessary to implement these changes using a scale of 1=little or no resources, 2=moderate resources, and 3=significant

resources.

Three most significant changes (please describe)	Circle the number that corresponds to the amount of resources needed to implement the changes <i>1=little or no resources, 2=moderate resources, and 3=significant resources</i>
1.	1 2 3
2.	1 2 3
3.	1 2 3

Please describe below any other important changes in forest management planning.

*1.2 Changes in Land Management **Practices in the Field***

If your entity **did not** experience change in land management practices as a result of certification please proceed to question 2.1

Please describe changes in land management practices due to certification. Examples may include changes in chemical usage, silvicultural regimes, wildlife and/or water quality management, forest products utilization, or new forest management practices. In addition, please indicate the amount of resources necessary to implement them using a scale of 1=little or no resources, 2=moderate resources and 3=significant resources.

Three most significant changes (please describe)	Circle the number that corresponds to the amount of resources needed to implement the changes <i>1=little or no resources, 2=moderate resources and 3=significant resources</i>
1.	1 2 3
2.	1 2 3
3.	1 2 3

Please describe below any other important changes in land management practices.

Section 2: The Goals and Benefits of FSC Certification

2.1 Goals of certification and their achievement

Please describe your organization's **three most important goals** for seeking certification. Please list them in order of importance with the first being the most important and the third being the least important. Also, indicate the degree to which each goal has been achieved on a scale of 1 to 5, with 1 being not at all and 5 being very much.

Goal (Please describe)	Degree of Goal Achievement (please circle) 1=not at all 5=very much
1.	1 2 3 4 5
2.	1 2 3 4 5
3.	1 2 3 4 5

2.2 Potential benefits of certification.

Please indicate the importance to you of the potential benefits listed below and the degree to which the benefit has been realized.

Potential Benefit	Importance to your organization 1=not important 5=very important	Degree that the benefit has been realized for your entity 1=not at all 5=very much
<u>Enhanced credibility of your company</u>	1 2 3 4 5	1 2 3 4 5
<u>Improved sense of pride</u>	1 2 3 4 5	1 2 3 4 5
<u>Improved external relations</u>	1 2 3 4 5	1 2 3 4 5
<u>Improved economic or market benefits</u>	1 2 3 4 5	1 2 3 4 5
<u>Validation of forest management plan or practices</u>	1 2 3 4 5	1 2 3 4 5

2.3

If you have experienced any other benefits as a result of certification please describe below.

Section 3: Your overall experience with FSC certification: costs, benefits, and impacts

3.1 Implementation Costs.

If you made forest management changes to comply with certification standards, have your forest management costs (land management planning and field practices)

1. remained the same
2. increased 1-5%
3. increased 6-10%
4. increased 11-15%
5. increased 16-20%
6. decreased
7. other_____

3.2

Certification is a new forest management tool. Consequently, the costs and benefits to your organization or how certification has affected your organization (impacts) may be unclear. Please indicate the degree of certainty you have regarding certification's benefits, costs, and/or impacts using a scale of 1 to 5 with 1 being very unclear and 5 being very clear. In addition, please explain why you rated your certainty as you did.

A. **Benefits** of Certification (1-very unclear, 5-very clear) Please circle: 1 2 3 4 5
Please explain:

B. **Costs** of Certification (1-very unclear, 5-very clear) Please circle: 1 2 3 4 5
Please explain:

C. **Impacts** of Certification (1-very unclear, 5-very clear) Please circle: 1 2 3 4 5
Please explain

3.3

Please circle the statement that best relates your overall comparison of certification's costs and benefits.

- A. The benefits greatly outweigh costs.
- B. The benefits somewhat outweigh the costs.
- C. The benefits and costs are about equal.
- D. The benefits have yet to outweigh the costs but I believe they will in the future.
- E. The benefits have yet to outweigh the costs and I do not foresee them doing so.

3.4

Please indicate the degree of your agreement with each of the following statements on certification by circling the appropriate number following the statement.

<u>Statements:</u>	strongly agree	somewhat agree	unsure	somewhat disagree	strongly disagree
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Certification will continue to increase in importance.....	1.....	2.....	3.....	4.....	5
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Certification will become

a normal part of doing business	1.....	2.....	3.....	4.....	5
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Certification is an effective way to get independent verification of good forest management.....	1.....	2.....	3.....	4.....	5
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Certification is a way for my organization to gain credibility in the eyes of our stakeholders.....	1.....	2.....	3.....	4.....	5
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Certification is a market incentive and will improve my organization's profit and competitiveness in the long run.....	1.....	2.....	3.....	4.....	5
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Certification is the right thing
to do because it promotes
regional and global
forest stewardship.....1.....2.....3.....4.....5

The certification process, including
scoping, auditing, and field assessments
is a very efficient process.....1.....2.....3.....4.....5

3.5

Using the following scale, has certification been a worthwhile venture for your entity?
(please circle)

1. Not at all
2. Limited worth
3. somewhat worthwhile
4. worthwhile
5. very worthwhile

Please give reasons for your answers:

3.6

At the time of your company's 5-year renewal of FSC certification how certain are you
that your organization will opt to re-certify? Please circle.

1. I am certain we will not re-certify.
2. We probably will not re-certify.
3. I am unsure if we will re-certify.
4. We probably will re-certify.
5. I am certain we will re-certify.

Please give reasons for your answer.

Thank you for your time and effort in completing this survey. Your cooperation and help with this study is greatly appreciated. If you have any questions or additional comments please send them to the address indicated on the front or to one of the following email addresses: Angela Hartsfield—ahartsfi@utk.edu or David Ostermeier—daveo@utk.edu.

VITA

Angela Nicole Hartsfield was born in Detroit, Michigan on January 11, 1979. She moved to Tennessee with her family in August of 1986. She attended Bearden High School in Knoxville and graduated in 1997. In August of 2001, she graduated from the University of Tennessee, Knoxville with a Bachelor of Science in Forest Resource Management. She received her Master of Science degree in Forestry in December, 2003 from the University of Tennessee, Knoxville.

Her fields of interest include forestry, environmental policy, and environmental law. She intends to pursue her law degree beginning in the Fall of 2004. Eventually, she aims to work in the area of environmental policy and law.