

Assessing the Benefits of Forest Certification
for Non-Industrial Private Forest Landowners in Washington State

by

Peik Andersen

A Thesis
Submitted in partial fulfillment
of the requirements for the degree
Master of Environmental Studies
The Evergreen State College
June 2017

©2017 by Peik Andersen. All rights reserved.

This Thesis for the Master of Environmental Studies Degree

by

Peik Andersen

has been approved for

The Evergreen State College

by

Edward A. Whitesell, Ph. D.
Member of the Faculty

Date

ABSTRACT

Assessing the Benefits of Forest Certification for Non-Industrial Private Forest Landowners in Washington State

Peik Andersen

Certification offers a way for landowners to manage land for economic benefit, while positively influencing the ability of forestland to sustain important ecosystem services. Changes in ownership structure and goals resulting from fragmentation and ex-urbanization challenges the capacity to perform this function. Decisions to certify have a complex set of factors and are not well understood. Consequences of this knowledge gap are that certifications may not be effectively addressing the needs of non-industrial private forest (NIPF) landowners, also known as family foresters. Providing more value to landowners could increase the amount of land being managed in sustainable ways. This thesis identifies the conditions that allow Washington State landowners certified through the Washington Tree Farm Program to benefit from certification. Through electronic surveys completed by 80 tree farmers, using open- and closed-ended questions, this survey identified aspects of certification valued by family foresters, how they benefitted, and how this changed with property size and time of ownership. Motivations and benefits of family foresters in Washington State were found to be influenced by property size and time of ownership. Economic incentives provided little benefit for small landowners but increased with property size. Premiums from certified timber sales were not a primary value or benefit for most landowners, who were instead motivated by a strong sense of forest stewardship. Social networks created by certification were found to be valuable for family foresters. Promoting social networks through certification programs to connect landowners may be an effective method to attract tree farmers and elevate the quality of forest management practices across rural America. Programs that promote sustainable forest management should consider the variety of landowner management objectives. This knowledge can inform programs and forest policies to continue building sustainability across rural landscapes.

Table of Contents

List of figures	vi
List of tables.....	vii
Acknowledgements.....	viii
1. Introduction.....	1
2. Literature review	10
2.1 Changing demographics.....	10
2.2 Family forester values.....	14
2.3 Past outreach efforts.....	17
2.4 Economic incentives	22
2.5 Conclusion	24
3. Methods.....	26
3.1 The population and sample	28
3.2 Survey design.....	29
3.3 The data.....	32
3.4 Validity issues.....	35
3.5 Data analysis	36
4. Results.....	38
4.1 General results	39
4.2 Perceived benefits of certification	40
4.3 Actual benefits reported.....	46
4.4 The influence of time	50
4.5 Tree farmer management goals.....	51
4.6 Selection bias	54
5. Discussion.....	56

5.1 Main findings	57
5.2 Values, motivations, and benefits with time and space	59
5.3 Open-ended responses	67
5.4 Implications for sustainable forest management.....	69
6. Conclusion	72
Works cited	74
Appendices	
A. Washington Tree Farm Program Survey	76
B. Invitation to participants.....	82
C. Research subject consent form to participate	83

List of Figures

Figure 1: Time of ownership.....	39
Figure 2: What tree farmers reported to value in certification.....	46
Figure 3: Perceived benefits reported from open-ended question	50
Figure 4: Activities tree farmers are reporting to engage in post-certification.....	53
Figure 5: Reported topics of value from open-ended question.....	54
Figure 6: Changes made to certify	55

List of Tables

Table 1: Respondent profile by acreage.....	38
Table 2: Influence of demand for certified forest products	41
Table 3: Influence of higher prices paid for certified forest products	41
Table 4: Influence of public pressure to certify	42
Table 5: Influence of access to information and support for management.....	43
Table 6: Influence of personal sense of responsibility.....	43
Table 7: Influence of public recognition for responsible forest management	44
Table 8: Influence of new markets to sell timber products.....	45
Table 9: Benefit of access to new buyers of forest products	47
Table 10: Benefit of higher prices paid for forest products	47
Table 11: Benefit of access to information and support	48
Table 12: Benefit of public recognition for responsible forest management.....	49
Table 13: Influence of access to information and support with time.....	51
Table 14: Benefit of access to information and support with time	51
Table 15: Aspects of certification ranked most valuable.....	52
Table 16: Reported changes to operation since certifying.....	52
Table 17: Topics of interest to tree farmers	54
Table 18: Tree farmers managing to certification standards prior to certifying	55
Table 19: Tree farmers that made lots of changes to become certified	55

Acknowledgements

Thank you to Nicole Hill, Bob Obedzenski, Tammie Perrault, Elizabeth Ide, and all the volunteers and landowners involved with the Washington Tree Farm Program that contributed to this research project. This thesis would not have been possible without your contributions. I would also like to thank Angie Munguia, and my reader, Dr. Edward Whitesell, for supporting this endeavor.

1. Introduction

Forests are important for many reasons. Ecologically, forests act as a filter that provides us with clean drinking water. Forests provide habitat for animals and other organisms. Forests enrich people's lives with recreational opportunities, scenery, and other spiritual benefits. Forests absorb atmospheric carbon and turn it into wood fiber which not only helps to slow down the effects of climate change, but also provides jobs and income from forest products for those living in rural areas (Sagor & Becker, 2014).

Forest stewardship is a management approach to forestry with objectives that include the perpetuation of ecological, economic, and social benefits from the use of land (Kilgore, Snyder, Taff, & Schertz, 2008a). Sustainable forestry is defined by Kilgore, Greene, Jacobson, Straka, and Daniels (2007a) as "managing forests for their ecological, economic, and social benefits such that these benefits do not diminish in quality and quantity over time." (p. 185). The goals of forest certification are to protect soil, air, water, biodiversity, and other forest benefits by focusing on the processes by which forests are generated, managed, and harvested (Knoot & Rickenbach, 2011).

Timber harvesting is an important dimension of sustainable forest management because good site management practices positively influence the capacity of forests to sustain a wider range of important ecological benefits (Kilgore et al., 2008a). Forest certification of timber production exists to promote sustainable forest use that protects the environments, is economically profitable, and protects the interests of small timber owners.

Forest certification is a method to document that land management practices are effectively conserving their environmental, economic, and social benefits (Kilgore et al.,

2007a). Forest certification provides landowners with the opportunity to voluntarily have their land formally assessed to verify they are managing the land to the predetermined standards of sustainable forest management (Kilgore et al., 2008a).

Forest certifications were initially created by transnational and domestic non-governmental organizations who turned to the market to create incentives and persuade compliance in maintaining the ecological and social integrity of forest environments (Cashore, Auld, & Newsom, 2003). The countries that attended the 1992 United Nations “Earth Summit” could not agree on a forestry convention, due to developing countries not wanting to give up autonomy and developed countries not offering financial support to protect forests, which prompted development of the Forest Stewardship Council (FSC) as a private standard-setting body, which recognizes forest operations that meet specified criteria for sustainable forest management (Moore, Cubbage, & Eicheldinger, 2012). FSC and the Programme for Endorsement of Forest Certification (PEFC), which endorses an industry-backed alternative to FSC in North America, the Sustainable Forest Initiative (SFI), are the dominant certification systems globally (Kilgore et al., 2007a). The American Tree Farm Program is the oldest certification standard for forests in the US and certifies tree farmers with between 10 and 10,000 acres of land (WTFP, 2017). In Washington State, this certification is administered through the Washington Tree Farm Program.

The expectation and reward for certified landowners is that a market premium will be assigned to their certified forest products for engaging in socially and ecologically sound forestry practices (Daniels, Kilgore, Jacobson, Greene & Straka, 2010). Price premiums and access to existing and new markets are both incentives for producers that

differentiate their product through certification (Blackman & Rivera, 2011). Third-party auditors assess the quality of a company's forest management practices in relation to a predetermined standard, giving written assurance to the market that a forest product or process conforms to the requirements (Rametsteiner & Simula, 2003).

In the United States, we have substantial private timberlands and most of that is held by 10.4 million family foresters (Ma, Butler, Kittredge, & Catanzaro, 2012). Of the 751 million acres of forest in the United States, more than half of it is privately owned (Butler, 2008). Non-industrial private forest (NIPF) landowners, also known as family foresters, own and manage 264 million of these acres, or 35% of all US forest land (Butler, 2008). There is little distinction between NIPF's and family foresters and the terms are interchangeable in this thesis. NIPF's are defined by Schubert and Mayer (2012) as "forests owned by private entities such as individuals and families, that do not fall under the category of vertically-integrated timber companies." (p. 150). This means that no more than one aspect of processing is performed by the landowner. For example, harvesting and milling are considered 2 separate production aspects. Private forest owners include forest industry companies, businesses, corporations, partnerships, families, and individuals (Butler & Leatherberry, 2004). Butler (2008), defines family foresters as families, individuals, trusts, estates, family partnerships, and other unincorporated groups. The land owned by these individuals and groups must be at least 1 acre that is 10% or greater stocked with trees (Butler & Leatherberry, 2004). The term family forester also makes a distinction in that the ownership characteristics are associated with personal and family-centered management motivations in which

landowners also recognize the unique contribution their land makes in the greater landscape picture (Bliss, 2003).

NIPF's play a critical role as sustainable forestland stewards in Washington State. While 56% of forest land is owned by family foresters nationally, the ratio of public versus private ownership varies by region and private landowners own 30% of forestland in the west (Oswalt & Smith, 2014). Family foresters are important because they manage so much of the nation's forests and their collective decision making accounts for over a third of the management that occurs in US forests. The collective behavior has a large impact on the sustainability of US forests (Ma et al., 2012). Owner relationships with the land have important implications for the sustainable production of timber and the continuing benefits of ecosystem services like clean water (Butler & Leatherberry, 2004). Amongst the ecosystem services and ecological benefits their forests provide, family foresters account for over half of the national timber supply (Rickenbach, Zeuli, & Sturges-Cleek, 2005). Because timber harvests have been declining on public land, family foresters play a larger role than ever in the supply of timber (Bliss, 2003). The certification rate is low with respect to private, non-corporate forestland (Kilgore et al. 2007). Only 4.2% of forest land in the US is certified by just .08% of the landowners (Ma et al., 2012).

Geographically, family forest land plays a critical role in forest systems. Because early settlement patterns in the west made it so family forest land occupies many riparian corridors and is at lower elevations, this land has an importance disproportionate to the area it occupies due to it being critical habitat to species like salmon and endangered species like Northern Spotted Owls and Marbled Murrelets (Bliss, 2003). Additionally,

this land disproportionately dominates the area around cities and family forestland provides ecosystem services like open space and aesthetic beauty that improve urban dwellers lives (Bliss, 2003). Family forestland typically provides a unique mixture of young to medium aged trees and open spaces from abandoned farmland that contributes to ecological diversity in the landscape which might otherwise be dominated by the homogenous industrial commercial timber operations or mature Douglas-fir stands found on public lands in the Pacific Northwest (Bliss, 2003).

Shifting demographics and land management goals raise questions about the efficacy of certification programs in the United States. A study by Butler and Ma (2011) that examined the National Woodland Owners Survey, a periodic survey conducted by the U.S. Forest Service on small forest landowners, revealed that individual forest ownerships are shrinking in size while the amount of non-farming forest landowners is simultaneously increasing. Zhang, Zhang, and Schelhas (2005) examined NIPF landowner data collected by the U.S. Forest Service since 1952 which showed that landowners who identified as “farmers” shrank from approximately 173,000 to 82,000 and those identified as “other private” rose from approximately 132,000 to 205,000 between 1952 and 1992. The authors of this study did not provide data past 1992 because data distinguishing the two categories was likely not available because it is getting harder to distinguish them apart (Zhang et al., 2005).

The amount of low-density rural housing has increased 5-fold since the 1950's (Ferranto, Huntsinger, Stewart, Getz, Nakamura, & Kelly, 2012). Butler and Ma (2011) found that in 20 states in the northern United States between 1993 and 1996, that the amount of family foresters owning between 1 and 9 acres rose from 6.6% to 9.5% while

the average property size shrank from 25 to 20 acres. Between 1990 and 2010, urban land in the United States increased from 2.5 percent of total land area to 3.6 percent in 2010 (Oswalt & Smith, 2014). Urbanization affects the forest resource and its management by eliminating some trees and forests, increases population density, human activities, and urban infrastructure (Oswalt & Smith, 2014). As urban landscapes increase across the nation, rural forest landscapes are often converted to developed lands and with more than 80 percent of the U.S. population living in urban areas, ecosystem services provided by urban trees and forests are significant and valued in billions of dollars annually (Oswalt & Smith, 2014).

A phenomenon over the last several decades is the growth of exurban landowners with non-timber management goals which is increasing the overall variety of ownership goals in America forests. These alternative reasons for ownership are concepts which include privacy, home, and land investment and were reported by Bengston, Asah, & Butler (2011) to be the 3 biggest motivations for ownership amongst forest landowners. This trend presents an issue for ensuring forestland is managed in ways that promotes the continued flow of ecosystem services.

Adding to this issue is an aging population of family foresters indicating that owner demographics will undergo rapid transformations in the near-term future when lands are sold or gifted to new owners (Butler & Leatherberry, 2004). From the results of the NWOS, Butler and Leatherberry (2005) determined the average age of family foresters to be 60. In 2014, the U.S. Forest Service reported that 20% of U.S. forestland is owned by people 75 years of age and older (Oswalt & Smith, 2014). This same summary also reported that people aged 65 to 75 owned 28% of U.S. forestland. A shift in

landowners with a long history of residence and of management for timber production to a younger population of newcomers that are looking for amenity values as opposed to cutting down their trees will certainly affect how and where timber is sourced from.

The potential consequences of new owners managing for purposes other than timber production and reduced property sizes affect the ecological, economic, and social integrity of the landscape. Fragmentation contributes to habitat destruction as areas of forest are repurposed with housing, agriculture, or other uses reducing forest connectivity. Urban land in USA increased from 3.1% in 1990 to 3.6% in 2010 (Oswalt & Smith, 2014). Reduced property size causes a loss in landowner management options resulting in further declines in timber production (Bliss, 2003). Increased social conflict can result as rural and urban lifestyles meet as new neighbors move out of the cities and into the woods (Bliss, 2003).

This thesis addresses some of the most important of these questions, within the context of Washington State. Certification offers a way for landowners to manage land for economic benefits, while positively influencing the ability of forestland to sustain a range of important ecosystem services. The changes in ownership structure and goals resulting from fragmentation and ex-urbanization challenges the capacity to perform this function. There is a need for research to inform and improve certification programs for our times.

The objectives of this thesis project are to identify conditions where landowners benefit from certification under the American Tree Farm System (ATFS), identify what is valued by landowners in this program, identify how the values and benefits might change

with property size and time of ownership, and understand how this knowledge can inform programs and forest policies to continue building sustainability across rural landscapes.

Partnering with the Washington Tree Farm, which has certified 400,000 acres in Washington State (Washington Tree Farm Program, 2017), I collaborated on an electronic self-administered survey that asked 44 open- and closed ended questions and was sent to approximately 450 tree farmers. The Washington Tree Farm Program provided me with technical expertise and their database of ATFS certified foresters to sample from.

My research question asked what motivated family foresters to certify their forests and how this benefits NIPF landowners. Through analyzing the survey results of 80 ATFS certified family foresters, I found that motivations and benefits of NIPF landowners in Washington State are influenced by property size, time of ownership, and social influences. Economic incentives provided little benefit for small landowners but increased with property size. Premiums from certified timber sales are not a primary value or benefit for most landowners. In general, landowners are motivated by a sense of forest stewardship or “land ethic”. Social networks created by certification were found to be a substantially valuable component within the community of family foresters.

These findings can lead to enhanced sustainability within Washington’s private forests in the several ways. Promoting social networks through certification programs to connect landowners may be an effective method to attract tree farmers and elevate the quality of forest management practices across rural America. ATFS certified Washington tree farmers rated this as an important motivation for certifying and benefit they got from it. Programs that promote sustainable forest management should also consider the variety

of landowner management objectives. Certification programs can be more efficient with their resources by understanding the differences in their members.

Decisions to certify have a complex set of factors and are not well understood at this time. Consequences of this knowledge gap are that certifications may not be effectively addressing the needs of small NIPF landowners and this could be a missed opportunity to increase the amount of certified land being managed in sustainable ways in Washington State and elsewhere, but also to prevent the reduction of certified land through attrition by providing more value to both new and long-term landowners.

In this thesis, I will begin with a review of the literature pertaining to motivations and values behind certifying forestland. I will go on to discuss the methods I used to learn about and record the motivations of NIPF landowner certification participation. Next, I will review the original data I obtained through surveys of NIPF landowners. Finally, I will discuss what the results of this data can tell us about assessing the effects of certification on NIPF landowners and its implications as a resource and strategy that benefits landowners while promoting the sustainability of forests and the ecological and societal benefits they provide.

2. Literature Review

The following review of past and current research on NIPF landowner certification will discuss the motivations and values of family foresters in general, and ones that manage with an emphasis on sustainability. Factors landowners consider include economic gains, the quality of incentive programs, varied learning opportunities, and recognition for forest management that goes beyond what government mandated forest regulations require. This literature review will look at the changing demographics of family foresters across the US and examine how ownership structure and values are changing and the potential impacts this may have on this nations forestland. This review will discuss how researchers have previously measured the success of “green premiums” earned from certified forest products and other programs and benefits reported by NIPF landowners. This section will look closely at potential spatial and temporal biases which could be barriers or affect the attitudes of landowners towards forest management. This review will go on to look at how effective current outreach programs targeted at elevating forest management practices are at reaching and recruiting family foresters. Evidence in this literature review will look at findings from previous outreach efforts by organizations wanting to promote sustainable forestry management and how they could reach family foresters more effectively by recognizing the unique values and motivations that family foresters have towards their forestland. The information and evidence reported in the review are from studies conducted throughout North America.

2.1 Changing Demographics

Family forester ownership patterns are undergoing several notable changes throughout the United States. Butler and Leatherberry (2004) analyzed the results of The

National Woodland Owner Survey, which is a series of periodic studies conducted by the U.S. Forest Service with the purpose of identifying the state of the all national forestlands. These studies by the U.S. Forest Service, which targeted forestland owners having 1 or more acres that were stocked with at least 10% trees, asked questions designed to reveal qualities of their owners including; demographic data, their intentions for the land, and where they received information and advice for managing their land (Butler, Leatherberry, & Williams, 2005). The results showed that landowners generally reported owning forestland for the privacy, lifestyle, or otherwise referred to as amenity-value that owning forestland provides, as opposed to reasons involving the production of sellable timber (Butler et al., 2005). Butler and Leatherberry (2004) found that along with a trend of large sections of privately owned forestland being divided into smaller ownerships, owner values are changing. In addition, survey results showed that the percent of family foresters harvesting timber has been decreasing (Butler et al., 2005).

Butler and Ma (2011) analyzed the results of the NWOS conducted on family forester landowners in 1993 and 2006, which revealed changing trends in ownership size, structure, and values. The results of these studies show that the number of acres owned by family foresters increased overall, while the amount of acreage owned by individuals decreased. The largest change in ownership patterns reported was the number of landowners owning the smallest class of property size from the study—between 1 and 9 acres, had increased the most (Butler et al., 2005). These studies all suggest that forests in the US are being collectively managed by an increasing number of landowners, which are managing ever smaller pieces of forest. The average number of acres owned by a family forester shrank from 25 in 1993 to 20 in 2006 (Butler & Ma, 2011). Butler and

Leatherberry (2004) concluded that because the average age of a family forester from the study was reported to be 60, that large land transfers would occur in the next couple decades due to aging of family foresters which would likely further lead to increased parcelization and potential fragmentation.

The U.S. Forest Service reported that the subdivision and re-purposing of land in the southeastern USA resulted in a 4.9-million-hectare reduction in forests between 1982-1997, and that they anticipate an additional conversion of 7.7 million hectares of mostly NIPF land by 2040 (Bliss, 2003). The rate of change from 1992-1997 averaged 2.26 million acres per year, representing a 50% increase from the previous 5 years (Sampson & DeCoster, 2000). Because shrinking property size erodes management options for timber due to the economy of scale, the continuation of this trend may further strain the ability of family foresters to manage for timber production reliably and provide the other benefits that accompany land dedicated to the long-term growth of trees.

The cause of shrinking forestland has several theories. (Bliss, 2003) asserted that timber producing forestland is declining in this country due to a shift in the forest industry now favoring smaller dimensioned trees grown in shorter rotational-periods in addition to a weakened social contract between the public and family foresters. This author's literary review attributes the decline in family forests to migration pattern shifts in human populations from rural to urban to suburban living and the influence of this change in shaping the changing rural landscape. Results from the preceding studies based on the NWOS would enforce this notion. Fewer foresters means less demand and capacity to support local lumber mills. The combined reduction in mills and conversion of mills to support the smaller diameter timber now more typical of industrial forestry

means that family foresters have fewer options available for selling and processing their timber.

Urbanization is a factor cited by Sampson and DeCoster (2000) to be partially responsible for the decrease in forestland due to there being strong incentives to convert land to other uses. In their review of the implications of fragmentation for sustainable forestry, the authors argue that the current tax system disincentives small forestry operations and that urbanization pushes out low-margin businesses such as agriculture, forestry, and milling which receive less benefit than urban tax-payers suggesting rural inequality as a cause (Sampson & DeCoster, 2000).

The structure of ownership is changing along with owner social values as people move back into rural areas (Bliss, 2003). The changing size and owner characteristics changes owner relationships to their land (Butler & Ma, 2011). The trending reduction of individual forest property sizes could lead to increased fragmentation when the land parcels are managed for different objectives (Schubert & Mayer, 2012). Since the 1950's, the amount of low-density rural housing has increased 5-fold (Ferranto et al., 2012). Due to shifts in attitudes of new forest owners, they are now less likely to be farmers, therefore more likely to have different and more varied relationships with their land (Butler & Ma, 2011). Land being managed by an increasing diversity of owners with unique goals is increasing fragmentation and increasing the challenge to conservation in the overall management of forests (Ferranto et al., 2012).

2.2 Family forester values

The cumulative decisions made by family foresters is comprised of the many discrete decisions made by landowners. Collectively, this group plays a large role in the

overall shape of forest ecosystems and the benefits they provide people. The goals of these landowners are therefore critical to understand for influencing their management decisions toward creating forests that are managed in ways that are sustainable for landowners, and provide benefits beyond individual property lines. Incentive programs that are not aligned with family forester values will likely be less effective than ones that are.

An early study of the values behind NIPF landowner management motivations was conducted by Bliss and Martin (1989) using qualitative methods to interview family foresters actively managing their land. The study identified 2 categories of motivating factors—internal and external incentives. Internal incentives contribute to a manager identity whereas external incentives involve benefits such as income production, technical assistance, forest tax programs, and forest incentive programs (Erickson, Ryan, & De Young, 2002). Although the study did not go on to address external incentives, the author’s findings contradicted a previous “mythical” concept that timber harvesting NIPF’s were driven by maximizing profits rather than managing for multiple uses.

An important aspect of the NWOS was to identify characteristics of landowners that participated in forestry incentive, educational, and technical assistance programs. This source of information about NIPF’s became the base for many subsequent studies on trends in ownership, values, and attitudes towards land management. For instance, Butler and Ma (2011) found in a study of family forest owners in the northern US, that the value of land as an investment has been increasing. Non-economic values of forestland ownership are also increasing (Butler & Leatherberry, 2004). Results from the NWOS show that nationally, only 9% of family foresters reported that timber harvest was a

reason for owning land, while in the west that number is reported to be 18% (Butler & Leatherberry, 2004). Butler and Ma (2011) found that newer owners were less likely to be tree farmers by comparing the value family foresters placed on managing land for timber production between the 1996 and 2003 studies. The NWOS studies provide insight into what rural landowners manage for and value in forestland. Both are key concepts in the discussion about strategies to reduce the rate which forestland is being converted into other non-timber uses and therefore retaining the ecosystem services that forests provide society.

An increasing number of land managers has resulted in a more diverse set of forest owner management objectives. Changing ownership property sizes and owner characteristics is changing the way that owners see and manage their properties (Butler & Ma, 2011). A shift in the values of forestland owners could have great implications for where Americans get timber products from, find recreational opportunities, spiritual values, and the degree to which we all benefit from healthy watersheds (Butler & Leatherberry, 2004).

Incentives that appeal to family foresters are ones that provide them with knowledge and advice for managing their forested land. Daniels, Kilgore, Jacobson, Greene, and Straka (2010) found the most appealing aspect of sustainable forestry incentive programs to be ones that provided face-to-face contact with professional forester support. Kilgore et al. (2007a) separately reported on the same study that family foresters desire the kind of interaction with foresters where they can see demonstrations and become educated about forestry issues and practices in person. The assessment of Kilgore et al. (2007a) was that technical assistance, cost-sharing programs, and

management planning assistance were 3 approaches which consistently led family foresters to elevate their level of forest stewardship.

Studies have provided evidence that many landowners manage their land for beauty, privacy, and non-consumptive amenities (Ma et al., 2012). A study by Erickson et al. (2002) of landowner attitudes in rural Michigan analyzed survey responses of landowners living in one agricultural watershed where the amount of forest cover had been increasing. The finding from the 112 responses showed that aesthetics and environmental protection were more important than economic incentives in motivating their land management practices. Furthermore, this study reported that there was no significant cooperation occurring between landowners to create this change. This suggests the landowners were independently managing for this benefit apart from one another.

Studies have shown that new forest owners that actively manage are managing for different goals than traditional forestland owners. Using a case-study approach, Rickenbach et al. (2005), performed a qualitative analysis using 22 semi-structured interviews that asked new ex-urban family foresters about their motivations for joining a cooperative in Wisconsin which offered one variety of certification to landowners. A key finding from this study was that NIPF landowners were frustrated by tax incentive programs that were oriented toward timber production and excluded incentives for alternative management focused on environmentally sensitive management goals. This finding suggests that the values of small landowners are likely broader and go beyond external incentives like economic benefits.

Previous studies have provided evidence that the forest industry and public land managers have sought certification as a means to increase their profits, improve or defend access to forest product markets, and earn public confidence (Ma et al., 2012). Timber harvesting for income has been shown to not be the primary goal of all private forestland owners, or their primary source of income (Rickenbach et al., 2005). Ex-urbanization and the flow of residents from cities into the forests brings new backgrounds and values which differ from traditional rural values (Rickenbach et al., 2005). Different management philosophies and objectives appears to be causing changes in the behavior of landowners in rural areas. There are few studies that connect the intentions of new forest owners with their values.

2.3 Past Outreach Efforts

Effective outreach is a method that could increase sustainable forest management across the United States. As forest parcels shrink, become more numerous, and become increasingly fragmented, outreach efforts will need to be scaled to reach the owners of these smaller, spaced-out, but increasingly significant forest plots. Jones, Luloff, and Finley (1995) recommended that programs should appeal to the growing number of family foresters and their increasing diversity. Understanding the preferred method of communication for family foresters could assist in connecting with the landowners and conveying the information and advice they are looking for in managing their lands.

Programs have been established to conserve private land for the benefit of the public by offering landowners technical assistance, education, and financial incentives (Sagor & Becker, 2014). To encourage land conservation and sustainable forest management, non-profits and government have created a wide range of programs and

policies aimed at forest landowners that include technical assistance, tax incentives, cost-sharing, forest conservation easements, outreach education, and forest certification (Ma et al., 2012). These groups which include government, universities, private consultants, foresters, and industry offer family foresters a variety of programs to assist them in achieving the goal of sustainable forest management which include technical assistance, financial subsidies, and outreach services (Rickenbach et al., 2005).

Many of the current forest policies connect landowners to technical assistance and advice from services offered by universities with the assumption that better forestry practices are associated with this expert advice. An early study by Hayward and Vertinsky (1999) identified motivations of both NIPF landowners and public land managers for utilizing certification programs by using structured interviews on a nationally representative sample of 20 participants. The results of the study showed that while the expectations for economic benefit through certification were high, the learning benefits reported were greater than expected. The findings show that certification has the potential to meet the needs of smaller operations as an important source of information for land management, which has been demonstrated to improve the management quality of forestland (Egan & Jones, 1993).

Receiving the right type of information could be very important for increasing the sustainable forest management practices of family foresters. Studies have revealed a demand for knowledge beyond just harvesting practices. Most programs offered to landowners contain some type of educational component (Schubert & Mayer, 2012). Kilgore et al. (2007a), found that the presence of more forestry experts was associated with better management practices. A study by Egan and Jones (1993) found a substantial

positive correlation between access to knowledge and land being managed for sustainability. Improving the decision-making process by providing diverse sources of information may increase the capacity of landowners to evaluate decision options and outcomes which can lead to better outcomes (Kilgore et al., 2007a). This is based on Weak-Tie Theory, in which the strong ties that make up a landowner's immediate social circles contain information that are more similar to its own than information that comes from those further outside their circle (Kilgore et al., 2007a).

What is not known is if the message of practicing sustainable forestry, which has been promoted through a certification program like the American Tree Farm System, or other stewardship programs, or the various economic incentive programs, can find success with a shifting group of owners and the changing surroundings as urbanization continues. With the increase in diversity in ownership, new landowners may be motivated by benefits other than economic gains from harvesting timber and therefore not participating in standard forestry programs which may not matter to them (Sampson & DeCoster, 2000). There may be a need to identify strategies in outreach programs that address changing ownership patterns. Incentive programs designed to help family foresters could reduce the rate of forestland being subdivided, and ultimately fragmented.

Studies have looked at the characteristics of the family forester data collected in the NWOS to determine how they can be used to improve programs and draw a wider range of participants (Knoot & Rickenbach, 2011). Looking at survey responses from the NWOS, Ma et al. (2012) analyzed 15,799 results to determine the characteristics of family foresters that participated in 3 major forest conservation programs across the United States—forest certification, cost-sharing, and conservation easements. Findings

from the study showed that those with more forest land were more likely to participate in all 3 programs than those having less forestland. This could either mean that those with less land are less interested to participate in incentive programs or that they are simply less aware that these programs exist. Ma et al. (2012) found that the amount of time a landowner had possessed their property did not significantly influence their participation in a forest certification program. This would indicate that new landowners could be as receptive to joining a program which promotes sustainable forest certification.

Previous studies have identified gaps in the distribution of information. Ferranto et al. (2012) found that most landowners are not reached by programs that assist landowners to increase the sustainability in their forest management practices. Rickenbach et al. (2005) found that only 20% of family foresters nation-wide have sought out professional assistance. Ma et al. (2012) were more conservative in their assessment and found that most of these programs have attracted less than 10% of family foresters nationally. In surveying 670 family foresters across California, Ferranto et al. (2012) found that individual organizations targeting family foresters collectively reached less than 60% of this group, and that no individual organization reached more than 30% of these foresters. Furthermore, the survey results showed that landowners having over 200 hectares were substantially more likely to receive advice for managing land from a diversity of organizations and that family foresters having between 4 and 20 hectares and were the least likely to receive advice (Ferranto et al., 2012). Given the shifting pattern of forest ownerships, land size appears to be an important factor needing to be addressed for increasing program awareness and participation.

The study by Ferranto et al. (2012) showed that almost all landowners are interested in receiving land management information and identified factors that influence landowner receptivity to information and advice. Landowners have reported varying interests based on the size of their property (Ferranto et al., 2012). Owners with 20 hectares or fewer reported more interest in ecological topics such as native plants, water quality, and pest management, whereas larger property owners reported more interest in receiving land use information on laws affecting their land, taxes, conservation easements, biofuels, livestock production, timber production, forest certification, and agritourism. (Ferranto et al., 2012). Research has shown that landowners are managing for a variety of goals and programs make a mistake by using only financial incentives as a lure (Butler, Tyrrell, Feinberg, VanManen, Wiseman, & Wallinger, 2007).

In addition to what family foresters were interested in getting from programs, researchers have looked at how family foresters prefer to receive this information. Family foresters rated private forester consultants as being the most favorable sources of information and that they preferred to receive mass distributed forms of information via written newsletters instead of electronic correspondence (Ferranto et al., 2012). In agreeance with this, a study by Butler et al. (2007), that examined the results of the NWOS pertaining to how family foresters preferred to receive information, found that while newspaper and television were also highly rated forms of communication for receiving information, the internet was the least preferred method for landowners to be informed. Butler et al. (2007) also found that effective outreach can bring more foresters into programs which promote sustainable forest management, but reaching them through the internet has shown poor results.

2.4 Economic Incentives

Current literature reveals a debate about the economic benefit of forest certification. It is unclear whether this is a profitable endeavor for small landowners. In theory, forest certifications should create an economic benefit for producers because the market will assign additional value to timber originating from sustainably managed forests. Green labeling allows supply chain stakeholders to sell a product that is socially and environmentally well managed at a premium price (Overdevest & Rickenbach, 2006). Certification should offset the adoption costs by increasing revenues, improving public image, and improving relationships with stakeholders which all potentially increase a company's competitive advantage (Bousslah, M'Zali, Turcotte, & Kooli, 2010). Empirical research shows limited support for this conclusion. This section addresses the research that has been documented on the economic factors that forestry operations consider in obtaining certification and the benefits that have been reported.

Kilgore et al. (2007a) sought to identify how different financial incentive programs performed in promoting sustainable forest management practices by family foresters. These researchers surveyed federal incentive program administrators in all 50 states and conducted 8 focus groups divided equally between program participants and non-participants from a pool of landowners across the United States representing the north, south, east, and west regions. The results of this study showed that financial incentives have limited influence on forest owners' decisions regarding how they manage their lands. Foresters reported that the most valuable incentive came in the form of technical assistance from public and professional foresters that could walk their land with

them (Kilgore et al., 2007a). The authors reported that this was regardless of the time the land had been in their possession or the level of forestry experience of the landowner.

When looking at programs that incentivizes forestland management geared towards sustainable management, many studies reveal that financial incentives to participate have weak appeal. Daniels et al. (2010) interviewed 8 NIPF focus groups as part of a national study to learn how this group responds to incentives for sustainable forest management. Their conclusion was that landowner purchase and management decisions were motivated more strongly by an ethic of conservation than by a pursuit of financial returns. The authors concluded that programs should avoid using financial incentives as a lure because the motivations and goals of NIPF's are much broader.

D'Amato, Catanzaro, Damery, Kittredge, and Ferrare (2010) tested their theory that subdividing land resulted from rising property taxes impeding the ability of family foresters to effectively manage their forestland. Using computer modeling to compare the economic returns of timber sales in the most rural watershed in Massachusetts, using a 30-year time frame in the models, this study found that economic returns were not enough to offset the property taxes imposed on their forestland. However, by comparing economic returns from timber management with tools commonly available to assist with the tax burden of managing timberland, the study found that either using a "current-use" tax program or "conversion easements" resulted in a net positive monetary gain regardless of the property size categories used in the study. This study is one example of the limited financial benefit of timber management for family foresters not participating in some form of assistance program. This study also suggests that programs to assist

foresters be designed to accommodate the infrequent harvesting of timber on family forest land.

Another interesting side to this seemingly changing identity of forest landowners comes from the harvesting side timber management. Kilgore, Leahy, Donnay, Hibbard, and Blinn (2007b), performed a survey using mail questionnaires sent to loggers in Minnesota which inquired about their attitudes toward the potential of participating in a certification program focused on harvesting practices with a focus on sustainability. The findings from this study indicated that although financial returns were the most important element in a decision to join, and the benefits they perceived from participating would not be economic, approximately 75% of respondents did say they would join (Kilgore et al., 2007b). This may be an indication of an industry recognized shift in the logging customer base and response toward their perceived environmentally sensitive values.

2.5 Conclusion

Research into sustainable forest certifications has suggested that they may not benefit small forest landowners and questions whether this attribute adds value to the sales of their forest products. Although price premiums for harvested timber have been considered an incentive to join certification programs, previous research does not seem to agree with this notion. Kilgore et al. (2008a) showed that economic gains do not motivate landowners to certify. Kilgore et al. (2007a) found through surveying that financial incentives were not a substantial motivating factor for landowners to certify their forest. Little evidence exists that certification provides this type of economic benefit, especially in the case of family foresters. Furthermore, there is little evidence that family foresters

are even motivated to join programs that promote sustainable forest management based on financial incentives alone.

Programs that connect landowners to advice and support for carrying out management objectives have been shown to be the most effective at reaching small landowners (Sagor & Becker, 2014). Other evidence shows that landowners rely on a variety of sources of information for managing their forests, with a higher value placed on resources that can provide technical advice and assistance in carrying out their management objectives (Schubert & Mayer, 2012). Programs with a focus toward supporting non-economic motives for management, and that provide them with in person assistance are reported by family foresters to be most appealing (Kilgore et al., 2007a).

3. Methodology

This research project looked at a sample population of American Tree Farm System (ATFS) certified non-industrial private forest (NIPF) landowners and measured the resulting combined economic changes, attitudes, and motivating factors towards and resulting from forestry certification adoption. Through analyzing results from a survey, I compared the intended outcomes of certification with the actual outcomes for this class of forest producers. Using an inductive approach, I sought to unveil the motivations for why small forest landowners chose to certify their land and how certification has measured up to their expectations. Both quantitative and qualitative data were collected from NIPF landowners certified under the ATFS with land holdings between 10-10,000 acres of forest. This acreage-based group are considered “small” foresters under the ATFS.

To achieve the objectives of this research, 450 ATFS foresters were sent an electronic survey. Each participant received an identical survey. Quantitative data collected included property sizes, time of ownership, degree of operational changes made to certify, attitudes towards certification, and benefits gained. Qualitative data collected included attitudes, values, and perceptions towards the benefits of certification. The data was used to identify causal relationships between certification and benefits, therefore allowing me to perform an evaluation of its effectiveness in a socioeconomic framework.

A survey was chosen for to evaluate land owner motivations for becoming certified and the benefits resulting from certification for NIPF landowners and in Washington State. This method was used due to the ease and speed of collecting data from the approximately 650 ATFS certified forest landowners across Washington State that make up the WTFP. The survey was designed to collect both qualitative and

quantitative data that would be used to infer values, attitudes, and beliefs of ATFS certified NIPF landowners across Washington State toward the perceived and realized benefits of certifying their land.

The geographical scope of this study covered forest landowners in Washington State that actively manage their forestland for sustainability. Only NIPF landowners certified under the ATFS were included in this study. Although a small number of ATFS tree farmers may have additional certifications, only landowners with the ATFS certification standard were looked at in this study.

The survey was created with the WTFP, the representative branch in Washington State of the ATFS. The questions for this research project were included in a questionnaire which contained additional questions that sought to understand how member farmer's forest management practices were affected by certification and to gather input from member farmers about what technological resources they would like to help them manage their forestland.

The WTFP provided technical expertise and their member database so that members could be sent the survey. My role was to design the electronic survey and include both their research questions and my own questions which this thesis is based on. I provided the WTFP with statistical results and a copy of my research.

My goal was to find out what benefits were anticipated when land owners first became interested in certifying and what benefits they reported after having participated. I compared their responses to the periods of time in which they had owned their farm and the amount of acreage they owned. Ownership time was divided into 5 categories that ranged from; 0-5 years, 6-10 years, 11-25 years, 25-50 years and greater than 50 years.

Acreage was divided into 4 categories that included; 10-49 acres, 50-99 acres, 100-299 acres, and 300 or more acres.

This section will discuss begin by discussing the population and sample the data came from. The next part will cover the survey design. After this, the data collected will be described. I will go on to describe validity issues with the data. Lastly, I will discuss how this thesis analyzed the data collected.

3.1 The population and sample

Data for this study were collected through electronic self-administered surveys sent to all WTFP NIPF landowners in Washington State. Surveys were emailed to 450 participants who previously indicated that they use email to communicate. These were sent out in mid-February 2017.

The ATFS made the member database available to me for this project. I requested a survey from each member directly through a newsletter and electronic mail making this a single-stage sampling procedure. Nonprobability sampling was used and subjects responded based on their availability to answer the survey or participate in an interview. Members who chose to not respond to either the online or mail in survey were excluded from providing data and contributing any meaning to the research. Because the sample was comprised entirely of the members volunteering to respond, this research is investigating landowner perceptions using a convenience sample, and therefore the methods presented in this project make it unable to determine how representative this sample is of the whole population.

Recruiting a probability sample was not the point of this research however. This survey was of an exploratory nature to gain insight about the attitudes of small forest

landowners certified through ATFS. The perceptions of this group could yield valuable insight as to how certification programs can better conform to meet the needs of their forest landowner members. The methodology was designed to evoke an understanding of their perceptions as to the benefits of certification and how in practice they were benefitting from certification. The point of the research is to discover what motivating factors exist for recruiting landowners into certifying their forestland and how do they benefit from what this program offers.

3.2 The survey design

To construct this survey, I reviewed academic literature on surveying small forest landowners and looked at survey instruments used in other studies which collected data from NIPF landowners. I used these studies to learn what had been effective for gathering data on landowner attitudes, beliefs, and learning what motivated them. Some ideas for the survey design came out of a National Woodland Owner Survey (NWOS) conducted by the USDA to assess forest landowner's perceptions about their forests (Butler et al., 2005).

The NWOS used an open-end question format which allowed respondents to use their own words to answer questions designed to understand woodland owners' values and motivations for owning forest land (Butler et al., 2005). The logic behind this method was that using pre-determined fixed response questions would prevent researchers from learning about other dimensions of ownership values that would be missed if respondents could not provide their own answers. The NWOS highlighted the importance of using qualitative data for gauging attitudes and values from NIPF landowners.

I included both open-ended and closed-ended items in the survey instrument used for this study because this form of mixed-methods research that has the potential to realize the benefits of both qualitative and quantitative research and there is some evidence that the reliability and validity of open-ended questions exceeds that of closed-ended questions in some cases, resulting “in a deeper and more nuanced understanding of the social phenomenon being studied” (Butler et al., 2005).

To gather the data needed to conduct this study, a survey template was developed to be used for an online survey to be emailed to ATFS members who previously indicated that they use email. With respect to the WTFP, my role was to design and build this survey and develop the questions to help answer my research question. There was a total of 44 questions in the survey and 10 of the questions pertained directly to the scope of this thesis project. The other questions were provided by the WTFP to answer their own questions pertaining to how tree farmers use technology to manage their forests. I had complete autonomy to design and ask my research questions, but received technical expertise, feedback, and expert guidance about certification to help me create questions that addressed certified forest land owners.

The survey template was constructed with the expert help and input of the executive board and technical committee of the WTFP. After the questions were initially developed, based on previous studies, literature, and survey instruments, the draft survey questions were sent to half a dozen WTFP board members, professional foresters and tree farmers for comment. The survey went through several drafts and 4 test surveys were sent out to ensure there were no technical issues. Feedback was incorporated into the final survey template. From this, an online survey (see appendix A) to be emailed to tree

farmers was created using SoGo Survey software. An almost identical paper survey was also created using word processing software to be mailed to tree farmers that requested one as indicated in the WTFP Winter newsletter and did not previously indicate to the WTFP that they used email. Only 1 paper survey was requested, but not returned. Of the 80 respondents, only one person contacted the organization about a technical issue.

Due to time and budgetary constraints with this project, to administer the online survey I used a slightly modified standard Dillman Method (Dillman, Tortora, & Bowker, 1998). My method involved the WTFP sending a quarterly newsletter to ATFS members via email which included an announcement about the survey, an explanation and invitation to take the survey, and a hyperlink to begin the survey. Two weeks later the WTFP sent a follow up direct email which introduced and explained the survey again, and provided the link to the survey. The data analyzed in this paper was collected from the approximately 80 family forest owners who participated in this survey in the Washington State between February and March, 2017.

The online survey used SoGo Survey software which had professional tools and survey analysis features. To include the results of both versions of the survey together, the software had a feature that allowed me to import survey data from the paper responses into the software to incorporate all the results from both surveys for the same analysis. The software enabled me to create my survey and embed a link in an electronic newsletter and email a link directly to respondents. The software was also used to generate descriptive statistics and create visual graphs depicting the results of my survey for both the online and paper responses.

The survey was comprised of varying types of questions. These questions included dichotomous, multiple choice, rank order, closed- and open-ended questions. The survey questions revolved around tree farmer perceptions of what they valued about certification both before and after certifying and how their forestry practices changed because of certification. The survey also asked questions designed to measure the benefits which tree farmers reported to gain because of certifying their forests. The survey was designed to identify and measure drivers of certification adoption including the social forces, economic benefits, and alternative benefits of certification adoption. The survey contained questions designed to eliminate selection bias in certifying forest and account for the influence of economies-of-scale, hypothesized in previous studies to be influenced by the size of forest property size owned (Nussbaum, Garforth, Scrase, & Wenban-Smith, 2000).

The measurement scales used in the questions included continuous scales where respondents were asked to indicate the degree that benefits motivated them to certify their lands along a three-point Likert scale. The measurement scale also included categorical scales which asked for yes/no responses and to rank items in an order from highest to lowest importance.

3.3 The data

Data collected in this study included (a) property size (b) number of years as a tree-farm owner (c) owner management practices prior to and post-certification (d) self-reported owner motivations to certify (e) self-reported owner benefits gained from certifying (f) topics which owners valued pertaining to managing their land (g) how they

preferred to receive information from the ATFS, and (g) where they got their information from.

To facilitate a comparative analysis of the perceived and realized benefits of certification across a complete temporal scale of pre- and post-certification, participants were asked both how long they had long they had owned their tree farms. To reduce selection bias, participants were asked dichotomous-type questions about management practices pre- and post-certification. Participants were asked open-ended questions about changes prior to certification to identify potential selection bias contributing to their obtaining certification.

To measure and understand learning as a benefit resulting from certification, participants were asked a dichotomous-type question about the changes they had made since becoming certified. Additionally, participants were asked an open-ended question about what kinds of changes they had made since becoming certified to gauge their degree of altering forestry practices because of knowledge gained as a benefit of certification. Rank order-style questions in the online version of the survey were asked to ascertain which aspects of certification they valued. The responses were randomized to eliminate selection bias in the first questions being answered at higher frequency than the options lower on the list.

Influencing forces in certifying were obtained by asking 3-point Likert scale questions about how specific factors affected landowner decisions. Respondents could rate the influence as being: “Not at all”; “Somewhat”; and “Greatly”. Influences were assessed using the following categories: “Demand for certified forest products”; “Higher prices paid for certified forest products”; “Public pressure to certify from community or

groups”; “Access to information and support for managing their operation”; “A personal sense of responsibility”; “Access to new markets to sell timber products”; and “Public recognition for responsible forest management”.

A 3-point Likert scale was chosen to investigate respondent’s beliefs and simplify the questionnaire. Using a larger 5-point Likert scale would show intensity of belief, but would not allow me to make as clear an inference as to whether each factor was either influential or not influential. The 3-point Likert scale was reliable in this case because what I was asking for would be more likely to be understood and not bog the respondents down with analyzing the difference between degrees on a larger scale and possibly losing interest in the survey altogether. This was also done to avoid introducing extra variance between choices which could introduce error by creating a higher level of confidence in unreliable data. Knowing if each factor was substantially influential was the purpose of using the Likert scale. A 3-point Likert scale also did not force a choice between extreme options like using a 2-point Likert scale would have.

Participants were also asked an open-ended question about what additionally influenced their decision to obtain certification beyond what they were given as choices. These were designed to elicit landowner motivations and perceived benefits for certifying that this study would otherwise not account for. Respondents could fill this in using their own words rather than pre-selected options.

Measuring the perceived benefit of obtaining certification was addressed by asking survey participants using questions with the same 3-point Likert scale response format. Survey responses to the question of degree of benefit provided by certification included: “Access to new buyers of forest products”; Higher prices paid on certified

forest products”; “Access to information and support for managing operation”; and “Public recognition for responsible forest management”. Additionally, participants were asked an open-ended question about what “other” benefits certification provided them. Again, they could fill this in with a response using their own words rather than pre-selected options.

3.4 Validity issues

To address content validity, questions were written using principles from Dillman’s Total Design Methodology (Dillman et al., 1998). Questions were written in plain language and directions for answering survey questions were built into the questions. Underlining of key words in the paper version was used to help ensure questions were being answered in the way they were asked.

Because convenience sampling was used, the sample is neither stratified. The sample was self-selected from the entire population of ATFS certified foresters in Washington State. It cannot be known whether any possible strata are equally represented in this study. Any correlations discovered through statistical analysis of relationships between land size or time certified would be weak due to the convenience sampling methodology. Determining the probability of small landowners seeking certification is also outside of the scope of this research. The whole population of ATFS NIPF landowners in Washington State were invited to participate in the survey. Therefore, as the cooperation rate increased, the credibility of these results should also increase and accuracy of inferring information about the whole group’s perceptions and values towards the values of and benefits realized through becoming certified. The cooperation rate for this study was 18%.

Other research on this subject discussed selection bias as a factor which may have skewed the results of past studies. The cautionary element here is that landowners that already meet the criteria for certification may choose to certify due to ease. I included questions in this survey which asked respondents to indicate whether; (a) they managed their land to certification standards prior to seeking certification, (b) they had to make changes to their management practices to certify, and (c) they had made many changes to their management practices post-certification.

For the online survey, the order of predetermined multiple choice answer questions was randomized to avoid bias introduced by respondent tendency to answer the first options given with more frequency. A main difference between the electronic and paper survey was that randomization of answers could not be done with the mailed paper survey. Only 1 paper survey was requested and was never returned.

3.5 Data analysis

From the responses to open-ended questions, a typology of the diverse and multidimensional motivations expressed by respondents was developed. The relative frequency of expression of these motivations was also examined. A secondary objective was to compare the open-ended questions to the closed-ended questions to determine whether responses from the open-ended question provide additional or different insights into landowners' reasons for certifying.

Open coding was used to identify and categorize ideas expressed by respondents. This approach was used to capture themes and discover unanticipated ideas. Strauss and Corbin (1998) defined open coding as "The analytic process through which concepts are

identified and their properties and dimensions are discovered in data.” (p. 101). This method involves a multi-step analytical reading process to identifying recurring themes.

Many respondents listed several motivations, benefits, and values in the “other” boxes. If multiple responses were given, they were all coded. Some responses consisted of blended or intermingled reasons for certifying, rather than discrete reasons. In these cases, the response was coded for each of the individual reasons.

Survey respondents were grouped by several key characteristics to assess whether the perceived and realized benefits of certification and opinions and attitudes about certification could be differentiated per certain characteristics about each tree farm. These characteristics differentiated subpopulations by farm size and duration of ownership.

4. Results

This project collected data with the goal of understanding what forces are motivating landowners to certify their NIPF land. Secondly, this project collected data on the benefits that these landowners reported to gain through certification. Based on the literature review, this study looked to validate that the benefits reported would be non-economic in nature. This study also looked to identify whether the motivations of landowners and the benefits reported would vary with acreage size and time of ownership.

Based on the literature review, landowners with more acreage were expected to have motivations siding toward an economic nature and experience more economic benefit from certifying than landowners with smaller acreage. Smaller landowners were anticipated to be motivated by non-economic factors and find more value in alternative benefits. Newer owners were expected to be less motivated by economic reasons and more motivated by alternative benefits also.

The data collected included profiles which were compared to ownerships of varying acreage size classes and by time of ownership in years. Respondents were subdivided into 4 acreage classes (see Table 1) and 5 time categories (see Figure 1). These categories were used to compare the varying attitudes, beliefs, and values of the land

Acres managed	% of respondents	n
10 - 49	0.29	23
50 - 99	0.19	15
100 - 299	0.30	24
300 +	0.23	18

Table 1: Respondent profile by acreage (n, 80)

owners. Of the 450 surveys emailed out to Washington Tree Farm Program NIPF landowners, 80 were completed and submitted.

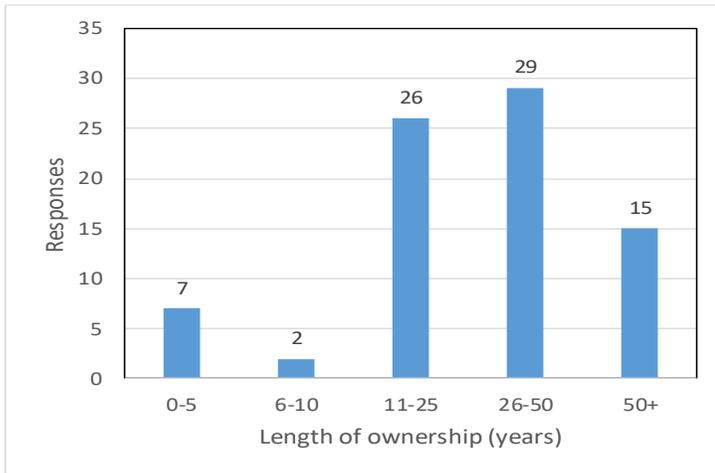


Figure 1: Time of ownership

4.1 General results

From this study, several patterns emerged. First, the data suggests motivations and benefits correlate with the size of land managed. Secondly, the study suggests that small landowners both make more changes to certify, and make more changes to their management after becoming certified. Thirdly, this study suggests that large landowners reported being motivated and benefiting more from economic factors than small landowners. Fourth, this study suggests that small landowners were motivated and benefit more from the support and educational factors that certification provides. Fifth, the results of this study suggest that large landowner's forest management practices are more effected by pressure from the community than small landowners. Lastly, those acquiring their land more recently responded similarly to those who had owned land for longer, with the exception of being motivated and benefitting from information and management

support. New owners were more motivated and found more value from this aspect of certification.

Speaking in general about the whole population of certified landowners, the results from the open-ended questions revealed a motivational and beneficial factor not addressed in the closed-response questions. Landowners reported a social aspect to being a tree farmer in several of the questions that was often cited as a higher frequency response.

4.2 Perceived benefits of certification

This section looks at the perceived benefits landowner's anticipated by certifying and compares their motivations to the size of property ownership.

4.2.1 Demand for certified forest products

This subsection will present the findings from the following survey question: Please rate the degree to which these factors influenced your decision to become certified: Demand for certified products.

The perceived demand for certified forest products in influencing their motivation to certify was reported to be greater amongst land owners with 300 acres or more (see Table 2). Additionally, proportionately fewer of these landowners reported that demand for these products had no influence at all in their decision to certify. The results show an increasing influence of this factor as the acreage size class increases. The results also show a generally decreasing pattern of this factor not at all having an influence with increased acreage.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.43	9	0.52	11	0.05	1
50 - 99	0.57	8	0.36	5	0.07	1
100 - 299	0.48	11	0.43	10	0.09	2
300 +	0.13	2	0.56	9	0.31	5
% for all acreage sizes	0.41		0.47		0.12	
Total n		30		35		9

Table 2: Influence of demand for certified forest products (n, 74)

4.2.2 Higher Prices Paid for Certified Forest Products

This subsection will present the findings from the following survey question:
Please rate the degree to which these factors influenced your decision to become certified: Higher Prices Paid for Certified Forest Products.

The perceived economic benefit of certification for increasing premiums through certifying forest products was reported to be greater amongst land owners with 300 acres or more (see Table 3). This class of landowner reported this factor to have a larger influence in their decision to become certified. Additionally, proportionately fewer of these landowners reported garnering additional premiums had no influence at all in their decision to certify. The smallest of acreage classes reported this factor to be not at all influential. Conversely, the largest classification of landowners entirely reported this aspect to be in the range of somewhat to greatly influential. The results show the increasing influence of this factor as the acreage size class increases. The results also show a generally decreasing pattern of this factor not at all having an influence with increased acreage.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.43	9	0.57	12	0.00	0
50 - 99	0.43	6	0.50	7	0.07	1
100 - 299	0.61	14	0.26	6	0.13	3
300 +	0.00	0	0.76	13	0.24	4
% for all acreage sizes	0.39		0.51		0.11	
Total n		29		38		8

Table 3: Influence of higher prices paid for certified forest products (n, 75)

4.2.3 Influence of Public Pressure to Certify

This subsection will present the findings from the following survey question:
Please rate the degree to which these factors influenced your decision to become certified: Influence of Public Pressure to Certify.

The influence of public pressure motivating landowners to certify was reported to be greatest amongst land owners with 300 acres or more (see Table 4). This was an almost entirely non-influencing factor for landowners with land sizes less than 300 acres. It is interesting that more than half of largest landowner responses reported this factor to be somewhat to greatly influencing in their decision to certify. There was an increasing pattern of influence with increased land size, and a generally increasing pattern of this being a not at all influencing factor with decreasing acreage.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.90	19	0.10	2	0.00	0
50 - 99	0.93	13	0.07	1	0.00	0
100 - 299	0.87	20	0.09	2	0.04	1
300 +	0.47	8	0.35	6	0.18	3
% for all acreage sizes	0.80		0.15		0.05	
Total n		60		11		4

Table 4: Influence of public pressure to certify from community or groups (n, 75)

4.2.4 Influence of Access to Information and Support for Managing Operation

This subsection will present the findings from the following survey question:
Please rate the degree to which these factors influenced your decision to become certified: Influence of Access to Information and Support for Managing Operation.

Information and support was an influential perceived benefit for all land size categories. Most classes considered this to be somewhat to greatly influencing in their decision to become certified (see Table 5).

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.14	3	0.55	12	0.32	7
50 - 99	0.07	1	0.40	6	0.53	8
100 - 299	0.22	5	0.39	9	0.39	9
300 +	0.24	4	0.59	10	0.18	3
% for all acreage sizes	0.17		0.48		0.35	
Total n		13		37		27

Table 5: Influence of access to information and support for management (n, 77)

4.2.5 Influence of a Personal Sense of Responsibility

This subsection will present the findings from the following survey question: Please rate the degree to which these factors influenced your decision to become certified: Influence of a Personal Sense of Responsibility.

All size classifications reported personal responsibility for sustainable forest management practices as being highly influential (see Table 6). This was not surprising given the nature of certification is to put this management philosophy into action, and the respondents were almost entirely certified as sustainably managing foresters. Personal bias to self-report positive self-motivations would likely also contribute to the way that respondents reported their behavior in this closed-type question.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.05	1	0.24	5	0.71	15
50 - 99	0.07	1	0.27	4	0.67	10
100 - 299	0.09	2	0.35	8	0.57	13
300 +	0.00	0	0.33	6	0.67	12
% for all acreage sizes	0.05		0.30		0.65	
Total n		4		23		50

Table 6: Influence of a personal sense of responsibility (n, 77)

4.2.6 Influence of Public Recognition for Responsible Forest Management

This subsection will present the findings from the following survey question: Please rate the degree to which these factors influenced your decision to become certified: Influence of Public Recognition for Responsible Forest Management.

The perceived benefit of public recognition for responsible forest management practices was reported highest amongst land owners with 300 acres or more (see Table 7). The results also show a generally decreasing pattern of this factor not at all having an influence with increased acreage and a generally increasing pattern of this aspect having “somewhat” of an influence. This class of landowner as well as the “10 – 49 acres” class both reported this factor to have a proportionately higher influence in their decision to become certified. However, only 6% of the “300+ acre” class reported this factor to be non-influencing, whereas 33% of the “10 – 49 acres” class reported this to be “not at all” influencing. The “50-99 acre” reported this the least as a “greatly” motivating aspect of certification.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.33	7	0.29	6	0.38	8
50 - 99	0.50	7	0.43	6	0.07	1
100 - 299	0.26	6	0.48	11	0.26	6
300 +	0.06	1	0.53	9	0.41	7
% for all acreage sizes	0.28		0.43		0.29	
Total n		21		32		22

Table 7: Influence of public recognition for responsible forest management (n, 75)

4.2.7 Influence of New Markets to Sell Timber Products

This subsection will present the findings from the following survey question: Please rate the degree to which these factors influenced your decision to become certified: Influence of New Markets to Sell Timber Products.

The relevancy of new market opportunities increases as the land size category increases and there is a general decreasing pattern of it “not at all” being a factor in influencing land owner’s decision to certify their land (see Table 8).

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.52	11	0.43	9	0.05	1
50 - 99	0.64	9	0.29	4	0.07	1
100 - 299	0.39	9	0.43	10	0.17	4
300 +	0.35	6	0.35	6	0.29	5
% for all acreage sizes	0.47		0.39		0.15	
Total n		35		29		11

Table 8: Influence of new markets to sell timber products (n, 75)

4.2.8 Perceived values from open-ended question

This subsection will present the findings from the following survey question:

What other factors influenced your decision to become certified?

The results from the open-ended question about what tree farmers valued varied (see Figure 2). A category I refer to as “Land ethic, appears to also play a significant role as a motivating force to certify. This term to describe his holistic view of humans as a part of the landscape and interact with it to “preserve the integrity, stability, and beauty of the biotic community” (Leopold, 1949). Tree farmers overwhelmingly responded answering this question with phrases such as, “be the best stewards we can be, right thing to do, forests for future generations, got to teach the daughters, etc.”.

A second category rated most frequently by landowners as a motivating force was “Social networking”. This category included response phrases such as, “benefit of being with like-minded people, comradery, recommended by forester, validation of practices, etc.”. Interestingly, this aspect was not addressed in the closed-ended questions about what tree farmers sought to gain through certifying their land, but appears to play a significant role in motivating this group in general to become certified.

The concept of “Recognition” was the third most frequently mentioned motivational factor to certify. Respondents answered with phrases such as, “recognition,

seen by others as high quality, maintains public license to operate, liked the sign of recognition, etc.”.

Although economic benefit was a category in the closed-ended questions on perceived value in certifying, many tree farmers mentioned it again and were specific about the type of economic benefit they anticipated gaining through certification. Examples of the responses included phrases such as, “cost-sharing, reduced taxes, lowered property taxes, hoping to earn a premium, etc.”.

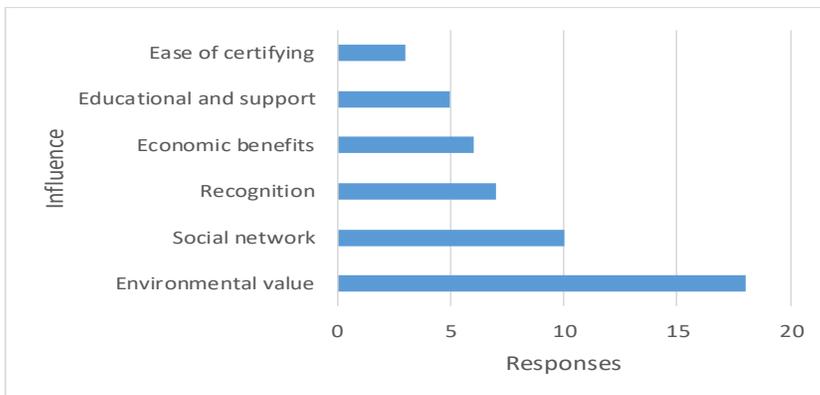


Figure 2: What free farmers reported to value in certifying

4.3 Actual benefits reported

This section looks at the perceived benefits landowners reported to gain by certifying and compares these benefits to the size of and time of property ownership.

4.3.1 Reported benefit of access to new buyers of forest products

This subsection will present the findings from the following survey question: Please rate the degree to which you find these aspects of certification to be beneficial: Access to new buyers of forest products.

The actual benefit of certification in facilitating a new market for tree farmers to sell sustainably managed forest products was low in general and lowest with the smallest land-owners (see Table 9). Large landowners were the least to report this benefit as not at

all being a factor though. Although slight, the reported benefit of this does increase with acreage.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.38	8	0.52	11	0.1	2
50 - 99	0.36	5	0.57	8	0.07	1
100 - 299	0.50	12	0.38	9	0.13	3
300 +	0.25	4	0.63	10	0.13	2
% for all acreage sizes	0.39		0.51		0.11	
Total n		29		38		8

Table 9: Reported benefit of access to new buyers of forest products (n, 75)

4.3.2 Reported benefit of higher prices paid for forest products

This subsection will present the findings from the following survey question:

Please rate the degree to which you find these aspects of certification to be beneficial:

Higher prices paid for forest products.

The results of this question show that certification is not effective at providing the benefit of increased premiums on forest products with an exception in the largest landowner category (see Table 10). The pattern that emerged from this question shows an increase in benefit with acreage size. Thirty percent of tree farmers listed this as “greatly” beneficial, whereas only 24% of them listed this as “not at all” beneficial. The results from this benefit are consistent with the other results about economic benefits. The benefit increases as the acreage increases.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.38	8	0.52	11	0.10	2
50 - 99	0.50	7	0.43	6	0.07	1
100 - 299	0.58	14	0.29	7	0.13	3
300 +	0.24	4	0.47	8	0.29	5
% for all acreage sizes	0.43		0.42		0.14	
Total n		33		32		11

Table 10: Reported benefit of higher prices paid for forest products (n, 76)

4.3.3 Benefit of access to information and support

This subsection will present the findings from the following survey question:
Please rate the degree to which you find these aspects of certification to be beneficial:
Access to information and support.

The results of this question show that everyone is finding some benefit from the support that certification provides (see Table 11). Small landowner's with less than 100 acres reported to benefit the most from this aspect. Large landowners having 300+ acres reported this benefit substantially lower than all other landowner classes. One can conclude from this data that large landowners may have access to support for managing their operation outside of what the certification program provides.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.09	2	0.36	8	0.55	12
50 - 99	0.00	0	0.33	5	0.67	10
100 - 299	0.17	4	0.38	9	0.46	11
300 +	0.11	2	0.67	12	0.22	4
% for all acreage sizes	0.10		0.43		0.47	
Total n		8		34		37

Table 11: Reported benefit of access to information and support (n, 79)

4.3.4 Benefit of public recognition for responsible forest management

This subsection will present the findings from the following survey question:
Please rate the degree to which you find these aspects of certification to be beneficial:
Public recognition for responsible forest management.

The benefit of recognition shows a pattern of increasing with acreage while simultaneously the degree to which this is not considered a benefit drops (see Table 12). With increased land size come increased visibility which might explain this factor. The

class of 50-99-acre tree farmer’s dips but there is also a lower population size in this subgroup which might explain this result. Overall, the patterns are consistent with size.

Acreage size	Not at all	n	Somewhat	n	Greatly	n
10 - 49	0.19	4	0.48	10	0.33	7
50 - 99	0.29	4	0.5	7	0.21	3
100 - 299	0.21	5	0.42	10	0.38	9
300 +	0.06	1	0.38	6	0.56	9
% for all acreage sizes	0.19		0.44		0.37	
Total n		14		33		28

Table 12: Reported benefit of public recognition for responsible forest management (n, 75)

4.3.5 Reported benefits of certification from open-ended question

This subsection will present the findings from the following open-ended survey question: What other aspects of certification have been beneficial?

Tree farmers were asked open-ended questions which they could self-report benefits not listed in the closed-ended questions what they found beneficial about being certified (see Figure 3). The 4 categories that were reported as being most beneficial were; community support, professional support, making a difference forest management with an emphasis on good “land-ethic”, and recognition for what they were doing.

While these responses confirm what the results from the closed questions show in the data tables, they also capture a benefit not initially considered in the set of question. The social benefit of certification through the interaction tree farmers get with other tree farmers was a frequently mentioned benefit of certification (see Figure 3). The second most frequently reported benefit was also social in nature, that is, learning from professionals. The results show that tree farmers receive substantial benefit from learning from each other and the professional services that certification provides them access to.

This is speaking generally about the whole population. Responses to this question were not sub-divided into varying acreage size classifications.

Recognition and “land-ethic” were also frequently cited (see Figure 3). Although public recognition was reported to be more beneficial with increased acreage, this factor was frequently cited in a question that asked tree farmers to provide their own responses to beneficial aspects of certifying. This potential benefit was not included as a response option in the closed-ended questions. Instead, tree farmers reported this to be a benefit not considered in the question set but was frequently mentioned.

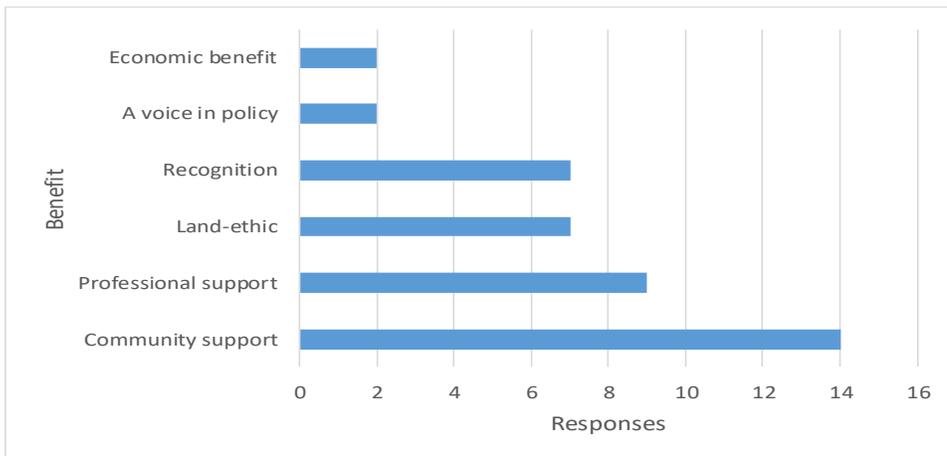


Figure 3: Perceived benefits reported from open-ended question

4.4 The influence of time

4.4.1 Time of ownerships influence in certifying

This section briefly looks at the perceived benefits landowner’s anticipated by certifying and compares their motivations to the time of property ownership. (See Table 13). The only factor included in this section was the influence of time on learning and

support. This comparison point did not reveal anything else of interest in the other questions, and was therefore not included in this thesis.

Tenure (years)	Not at all	n	Somewhat	n	Greatly	n
0-5	0.00	0	0.43	3	0.57	4
6-10	0.00	0	0.50	1	0.50	1
11-25	0.08	2	0.38	9	0.54	13
26-50	0.29	8	0.54	15	0.18	5
50 or more	0.21	3	0.57	8	0.21	3
All lengths of time	0.12		0.48		0.40	
Total n		13		36		26

Table 13: Influence of access to information and support with time (n, 75)

4.4.2 Time of ownerships effect on the reported benefit of certification

This section looks at the actual benefits reported by landowner from certifying and compares these benefits to the time of property ownership. (See Table 14).

Tenure (years)	Not at all	n	Somewhat	n	Greatly	n
0-5	0.00	0	0.29	2	0.71	5
6-10	0.00	0	0.50	1	0.50	1
11-25	0.04	1	0.32	8	0.64	16
26-50	0.17	5	0.52	15	0.31	9
50 or more	0.14	2	0.57	8	0.29	4
All lengths of time	0.07		0.44		0.49	
Total n		8		34		35

Table 14: Benefit of access to information and support with time (n, 77)

4.5 Tree farmer management goals

4.5.1 What tree farmers value in certification

Tree farmers were asked to rank in order aspects of certification they found valuable (see Table 15). The results are generalized for all tree farmers and were not sub-divided by acreage. The top 3 choices were closely ranked and all pertained to the learning benefit of certification. Economic benefits, recognition, and a voice in policy making were rated as less valuable than either of the educationally supporting options.

The responses collected about land owner values shows that learning and support for management were valued over recognition and marketing forest products (see Table 15). This is about the values of the total population. These responses were not subdivided into various acreage size classifications. Looking back at Table 11, this statement may apply less to landowners with 300 or more acres.

Answer	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Weighted Rank
							(Score)
Developing management plan	13	21	19	8	8	8	1 (307)
Educational Opportunities	15	13	16	20	9	4	2 (301)
Technical assistance/site visit	15	16	14	16	10	6	3 (300)
Recognition of your tree farm	15	7	12	14	9	20	4 (253)
Marketing of your forest products	13	11	7	12	17	17	5 (248)
Voice in policy making	6	9	9	7	24	22	6 (208)

Table 15: Aspects of certification ranked as most valuable (n, 77)

4.5.2 How tree farmer practices have changed with certification

In general, 21% of tree farmers reported making changes to the way they manage their land since becoming certified. These changes were entirely attributed to smaller land owners (see Table 16). None of the land owners in the “300 acre or more” category reported changing their practices at all since certifying. The percent of change increased as the size classification decreased.

Acreage	Yes (%)	n	No (%)	n
10 - 49	0.38	6	0.62	12
50 - 99	0.38	5	0.62	8
100 - 299	0.15	3	0.85	17
300 +	0.00	0	1.00	16
% of all acreage sizes	0.21	14	0.79	54

Table 16: Reported changes to operation since certifying (n, 79)

The largest change reported by tree farmers since becoming certified is following a plan for managing their forest (see Figure 4). Beyond this, stand management activities and managing for wildlife are frequently cited as activities that tree farmers are doing differently since certifying.

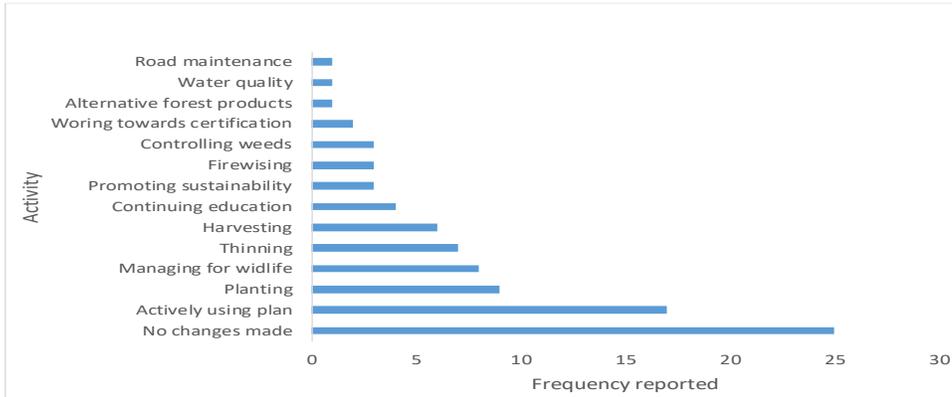


Figure 4: Activities tree farmers are reporting to engage in post-certification

4.5.3 Topics of interest to tree farmers

Looking at what topics are most valuable to tree farmers (see Table 17), this study points to what tree farmers manage or aspire to manage their land for. Through open-ended questions, the topics respondents ranked highest are related to developing timber. Although “maximizing timber value” was ranked second, “forest health” and “stand development”, which were ranked first and third, support the management goal of maximum timber value. The fourth ranked item, “developing management plan”, also supports this. The bottom ranked items do not reflect economic goals of timber product production. Answers to this question suggest the topics that tree farmers find of most value relate to the economic value of timber.

Answer	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Weighted Rank
								(Score)
forest health	20	17	15	11	6	3	5	1 (390)
maximize value of timber	21	13	6	8	15	10	4	2 (356)
stand development	4	16	25	16	8	6	2	3 (351)
developing management plan	13	6	10	17	13	13	5	4 (315)
wildlife habitat	5	10	12	15	7	21	7	5 (285)
legacy	10	8	6	8	13	7	25	6 (258)
harvesting systems	4	7	3	2	15	17	29	7 (201)
Total Responses								77

Table 17: Topics of interest to tree farmers.

Responses to the open-ended question show tree farmers in general are interested in a variety of issues (see Figure 5). Topping the list are policy issues relating to business management and economics. Ecological practices relating to forest management is also of substantial interest to tree farmers.

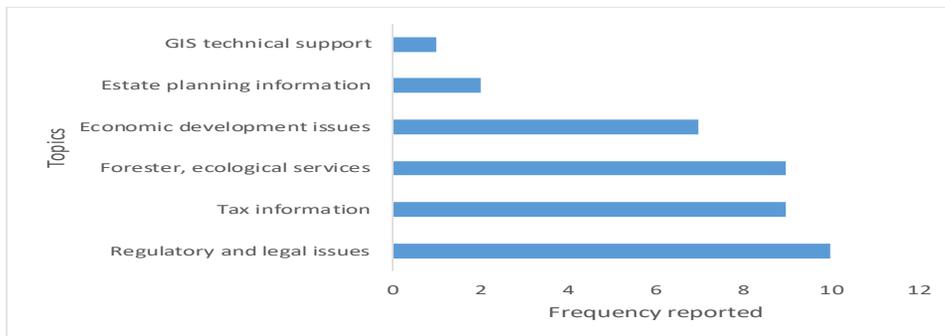


Figure 5: Reported topics of value from open-ended question

4.6 Selection bias

Most certified tree farmers reported managing their farms to certification standards prior to certifying (see Table 18). This value increased with acreage size. The data shows a compelling trend that selection bias may play a role in choosing to certify. The data suggests that becoming certified requires fewer changes to operational management activities as the size of the farm increases, and therefore less effort on the landowner's part to become compliant. An alternative explanation is that larger land

owners manage to higher standards initially due to higher scrutiny they are under with higher profiles due to property size.

Acreage	Yes (%)	n	No (%)	n
10 - 49	0.67	14	0.33	7
50 - 99	0.85	11	0.15	2
100 - 299	0.85	17	0.15	3
300 +	1.00	17	0.00	0
% of all acreage sizes	0.83	60	0.17	12

Table 18: Tree farmers reporting to manage to certification standards prior to certifying (n, 79)

In general, few tree farmers reported making management changes to become certified (see table 19). The rate of compliance increased with acreage. The only landowners that reported making changes to become compliant were those managing under 100 acres of land.

Acreage	Yes (%)	n	No (%)	n
10 - 49	0.12	2	0.88	15
50 - 99	0.07	1	0.93	11
100 - 299	0.00	0	1.00	18
300 +	0.00	0	1.00	16
% of all acreage sizes	0.05	3	0.95	61

Table 19: Tree farmers reporting to have made lots of changes to become certified (n, 79)

The two most cited responses to making changes to become certified were either developing or following a management plan—a essential criteria of ATFS certification, or not having to make any changes (see Figure 6).

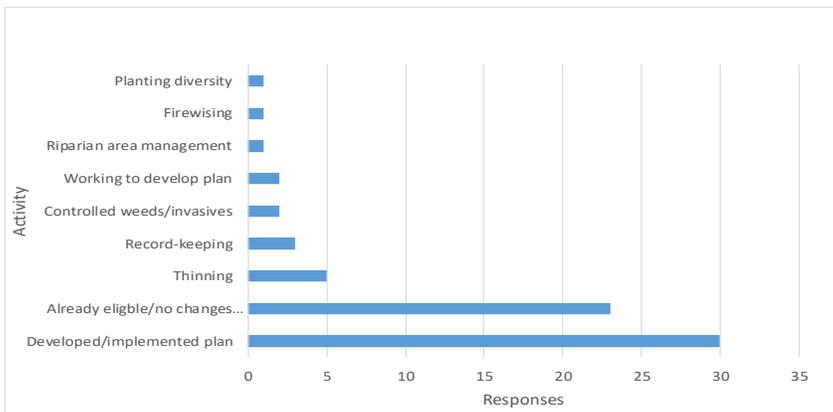


Figure 6: Changes made to certify

5. Discussion

The aim of this thesis project was to discover what motivates non-industrial private forest (NIPF) landowners to become certified, and how the benefits of certification reinforce their values and attitudes. Based on the literature review, I expected that the anticipated benefits of forest certification from this study would fall into the categories of profit, recognition, and support for forest management, while reported benefits would include only the second two of these, and that the results would vary in proportion to the size of the landholdings and the duration of their participation.

I expected tree farmers with more land to be more economically motivated whereas smaller landowners would be motivated by and benefit from alternative factors. The following section will compare findings from this study to existing information that has been collected and written about pertaining to small landowner values and attitudes toward forestry certification. I will compare how the benefits exceeded or fell short of the perceived benefit that motivated the landowner to seek certification. I will compare the values and benefits reported between the open- and closed-ended questions. Lastly, I will discuss the future implications based on the knowledge gathered from this project.

This project revealed components of certification that family foresters value. The framework of this study was that landowners were presumed to find value in certification through a combination of economic, learning, or recognition benefits. Through surveying NIPF landowners, the results revealed that this group places great value on practicing conservation, being part of a supporting network of tree farmers and forestry professionals, and being recognized for this. The size of properties and the time of ownership had varying influences on many aspects of forest certification for landowners.

Using both fixed response and open-ended questions, the findings from the survey revealed some insight into the reasons for certifying. In looking at the responses, it seemed logical and useful to group certain responses to motivating factors and benefits as “social, learning, etc.”. Many responses to questions orbited around concepts like these and this allowed me use general themes to discuss and compare to other studies on this subject.

5.1 Main findings

The results of the 80 surveyed NIPF landowners suggest that improving the ecological quality of forests and the social aspect to tree farming are the strongest motivating forces and greatest benefits realized by certified landowners. From the fixed response questions, “personal responsibility”, “support”, “learning”, and “recognition” were rated as the most “greatly” influential categories. From the open-ended responses, social networks and environmentally-conscious management themed answers were cited overwhelmingly in the responses.

Data from my study suggests there is a relationship between motivations for certifying and land size. Public scrutiny was reported to increase along with acreage. While landowner’s economic motivations also increased with acreage, other benefits appeared to increase with shrinking property size. Smaller tree farmer’s responses produced a general increase in motivations for, and benefits from, factors relating to learning and support.

The survey results point toward a bias potential in certification for larger landowners. This selection bias identifies circumstances in which larger landowners are not required to put in the same effort to achieve certification as small landowners. The

implication is that certification could be of a purely economic value or result from image consciousness and require no actual changes be made in practice. This idea implies that certification may not be effective in creating any real change in this group. While on one hand, they are meeting the goals of sustainable forestry, the bias this may introduce to this study does not help identify areas for creating incentives and facilitating others outside of those parameters to become certified, but instead skews them.

Although few tree farmers reported to have made changes to their management to become certified, tree farmers in the smallest acreage classification size reported to have made most of the changes. This suggests that larger tree farms are more actively managing their forests prior to certification. Reasons for this difference could have to do with varying access to resources. Larger tree farms may indeed be more sustainable in that their production may require, while offsetting the cost of professional services, which may have facilitated management to certification standards prior. Thus, larger tree farms may have an inherent greater degree of selection bias to certify than smaller tree farms. If this is the case, motivations for certification may be skewed due to the ease of certification for larger landowners. If there is no cost to bear, due to existing management practices meeting standards, then one can reason that to not become certified would be wasting a free opportunity to communicate to the market and public that responsible forest management is being practiced.

The changes that farmers were required to make were small however. Only 5% of respondents reported having to make “lots of changes” to certify. The 3 which reported making the changes were all respondents with fewer than 100 acres. The implication from this may be that tree farmers with smaller patches may require more technical

assistance to meet certification standards than larger farms. Most responses to this open-ended question about changes required pertained to implementing a management plan.

In a comparison of the responses from closed- and open-ended questions, other values emerged in possibly explaining the values that are important to tree farmers. These forces are both internal and external. Economically, tax benefits were mentioned as a benefit to operating a tree farm. Not only does this benefit vary by property size, but it also varies by the management activities on the land. Internally, a strong desire to manage “sustainably” was identified as being of major importance to tree farmers. This emotional attachment to land is the basis for using “land-ethic” as a theme with sub-categorical responses from tree farmers grouped under this heading. This term, “land-ethic”, is based on a concept of managing land with respect for it and the ecological communities it is composed of. Lastly, a revelation of this study is the social value and benefit reported by tree farmers through their responses to the open-ended questions.

5.2 Values, motivations, and benefits with time and space

Reported motivations of landowners were categorized into both economic and non-economic values. Economic values included motivations to certify due to demand for certified forest products, higher premiums earned on certified forest products, and access to new buyers of certified forest products. Non-economic values were further categorized as either being a desire for support, communicating an image to others, or meeting a self-actualization needs. Support values included certifying to gain knowledge and/or support for property management. Self-actualization meant that respondents rated the degree in which certification contributed to them meeting a personal responsibility to manage for environmental concerns.

5.2.1 Economic values

The demand for certified forest products and access to new markets as influencing factors were rated as more influencing for large landowners. This could be a result of larger landowners harvesting more regularly. There was a trend in the resulting data showing an increase in demand as the acreage increased. On the other hand, small landowners may only plan on a harvest once in a lifetime for their tree farm and this would therefore be less of a factor. The influence of higher prices paid for certified forest products as a motivational factor increased with land size. This implies there may be a perceived economic gain resulting from certification which could potentially increase with size.

Differences in results between smaller versus larger tree farms as reported in the perceived benefit of learning and support through certification carried over to values that could be considered both economic and non-economic, depending on the management goals. Small landowners appear to find more value in access to information and support for managing their tree farms. Having an “on-site” forester is likely does not make economic sense for smaller tree farmers. This may be a necessity for larger property owners. While larger acreage farms might find less benefit because they have the resources, small landowners may instead opt to use the free services provided through their certification program for assisting with implementing management strategies for their tree farms.

Economic gains have been found through prior research to not be much of an incentive in NIPF landowners (Kilgore et al., 2008a). Kilgore et al. (2007a), found financial incentives had limited influence on landowner decision making. This research

on certified forest landowners would agree that the motivation for certifying because of anticipated gains is low. However, this research finds the degree of influence of this value appears to be substantially affected by property size.

From the economical aspect of certifying, there was an increasing trend in its influence and benefit for landowners as the size of their property increased. This pertained to the influence of their perceived “demand for certified forest products” and “higher prices paid for certified forest products.” Of respondents, 31% of landowners with 300 acres or more, indicated that demand was a greatly influencing factor as opposed to only 5% of the smallest size category. The influence of perceived higher prices paid for their forest products was 0% for small landowners, whereas this progressively increased by size class to 24% of the largest acreage class finding this to be “greatly” influential.

Owners of larger properties were also more influenced by access to new markets to sell certified forest products. Reinforcing this idea of brand identity as a motivation are the results on public recognition for certification. Of the “300-acre or more” respondents, 41% ranked “public recognition” as a greatly motivating factor in their decision to become certified. In looking at motivations for certification, Butler and Ma (2011) found market-pressure as a significant influence among landowners that also included industrial foresters.

Using certification to communicate an image has been referred to in previous literature as “signaling” (Overdeest & Rickenbach, 2006). Signaling includes a desire for public recognition of responsible forest management. Signaling could also be considered an economic value in that it communicates qualities and values about a

product through forestry practices. Both the smallest and largest size classification of tree farmer rated this as a greatly influencing factor. The 300 + acres landowners group both reported public recognition as being most influencing for and rated this the lowest as “not at all” being a benefit.

Not everybody may desire recognition. Privacy may also be an issue in which people might not want their neighbors to know what they are doing. For example, a landowner growing trees for maximum timber value with plans to clear cut it all in the future may be conscious of neighborly objections to this aesthetic alteration of the landscape.

With increasing land size comes greater visibility, which may be a factor responsible for this result. The appearance of a large clear cut is certainly more noticeable and transformative of a view or sense of place than a small one. People are increasingly building homes and communities next to forests and these become part of a place’s identity. With higher visibility comes more scrutiny from neighbors and this could explain the results.

Sustainably managed forests may also be a point of pride for the “10-49 acre” class of tree farmers and they may enjoy communicating this to others. Tree farmers regularly conduct farm tours in which they discuss management practices. This could explain why the smallest size class also gave a high rating to recognition as being a “greatly “influencing force. The middle category “50-99 acre” landowners rated recognition as a factor of very low influence. Only 1 out of 14 rated this as a “greatly” influencing factor and half rated this as “not at all” influencing.

The economic benefit of certification was reported low across all categories of property size in this study, especially with the smallest classes. Only 13% of the largest acre owner class found this to be “greatly” beneficial at accessing new markets. However, 29% of those with 300 acres are more found this to be “greatly” beneficial in providing higher premiums for their forest products. This second part is promising because it implies there may be a profit-bearing incentive to certifying and a public that is aware and embracing of this concept.

Based on the literature review, there is not much evidence to suggest there exists an increased forest product premium benefit for many tree farmers. The results from this study reinforce that notion. The evidence of economic benefits reported by tree farmers were limited to tax benefits. One respondent summed this view by claiming, “Tree farm publicity is positive for the industry, but there is little financial incentive when there are fewer and fewer mills and monopolies by those remaining.” Another tree farmer backed this attitude saying that higher prices for certified timber are a “myth.”

Although certifying to add premiums to forest product sales doesn’t appear to be beneficial presently, farmers did report a desire to earn more through selling certified wood. When asked to rank the topics most valuable to them, the top choices were related to managing their timber stands. After forest health, maximizing the value of timber and stand development were listed as the 2nd and 3rd topics which tree farmers valued most. Maximizing timber value was ranked the #1 most frequently chosen value, but resulted as the #2 value when accounting for the weighted score of the 7 choices presented in the survey. Butler et al. (2007) identified idiosyncrasies in landowner attitudes compared to their actual practices. Although commercial harvest was listed as a low-interest, Butler et

al. (2007), found that 41% of family foresters surveyed in the NWOS, that collectively own 70% of the NIPF forestland, reported harvesting for commercial purposes in the past. Evidence from this research project reveals an unmet desire for certification to improve the bottom lines for tree farms.

5.2.2 Non-economic values

Larger landowner reported public pressure to certify as more motivating than smaller landowners. Of the landowners with 300 or more acres, 18% reported this as greatly motivating influence to certify. Reduced property sizes might imply that the public will be less influential in promoting sustainable forest management. Ferranto et al. (2012) showed through landowner surveys that smaller property owners are less likely to be targeted by outreach programs. Landowners in California with over 200 hectares were substantially more likely to receive land advice from diverse sources whereas those with 4-20 hectares were far less likely to receive any advice (Ferranto et al., 2010).

Many studies have reported that NIPF landowners desire information, and from multiple sources of support to help them manage their properties (Sagor & Becker, 2014; Schubert & Mayer, 2012). Kilgore et al. (2007a) found that both experts and peers were considered important sources of information. The NWOS shows that NIPF's seek advice from neighbors, friends, family, peers, and professionals (Schubert & Mayer, 2012). Research by Sagor and Becker (2014) demonstrated that these landowners valued public forester input over that of their peers. Alternatively, Schubert and Mayer (2012), found that although public forester advice was reported as preferred, that peer advice was more often applied.

The educational aspect of certification has been shown to have high value for smaller landowners (Hayward & Vertinsky, 1999). This research agrees with those conclusions. The motivation of access to information and support was reported lowest by the largest acreage class. The “50-99 acre” landowners reported the benefit at 53% selecting “greatly” indicating they benefit from the support the most. This size may be too large to not manage, but too small to have other internal forestry resources operating at a more industrial-like scale making for a self-sustaining operation. The “100-299 acre” category was the next highest to report this “greatly” as a motivating factor, but this value dropped off precipitously beyond 300 acres.

The smaller 2 categories of property owners assigned this category the most beneficial out of the sample population. While only 22% of owners with 300 or more acres reported this to be “greatly” beneficial, 55% of the “10-49 acre” class and 67% of the “50-99 acre” class favored this as a benefit. Comparatively, only 18% of the largest owner size class were motivated to certify by this category, whereas 32% of the “10-49 acre” group, and 55% of the “50-99” acre” group reported this as a motivating factor. This shows that both the smaller groups had their expectations of how this would benefit them exceeded. This demonstrates evidence that the strength and virtue of forest certification may be its potential to connect landowners with support to manage their forests in ways which promote its continued function as forest.

Landowners that I surveyed in this study were found to have strong environmental values. Based on past research, this is not surprising. The NWOS identified the top values of NIPF’s in owning land were recreation, privacy, nature, and wildlife (Schubert & Mayer, 2012). Bengston et al. (2010) found “recreation” and “home” to be top reasons

for owning property in the forest. Bliss and Martin (1989) also found through surveys that this group values the preservation and conservation of forests. Results from this research would agree that these landowners share a commitment for caring for the forested environments they make their homes, which they demonstrate and receive recognition for forest stewardship by participating in the Washington Tree Farm Program.

The greatest commonality in the responses of landowners that responded to this survey were that they shared a sense of responsibility which they indicated as a greatly influential factor in their decision to certify. This reinforces the idea of NIPF's as conservation-minded. Regardless of how respondents answered the survey about the economic motivation or benefit of certification, or how much property they had, or how long they had owned it, environmental responsibility was listed the highest through out of any category. The range based on property size ranged from 57-71% responding that this was a "greatly" motivating factor. NIPF's with 300 or more acres responded at 65% claiming this "greatly" influencing and the smallest landowners responded similarly at 71% claiming this "greatly" influencing. The greatest commonality discovered through the responses to fixed answer questions suggests that personal responsibility is an all-around motivating factor regardless of acreage. Most respondents reported the motivation to certify being influenced by a sense of personal responsibility to manage for "sustainability". Motivations for meeting this virtue were high throughout all the classes and only 4 of the 77 respondents rated this as "not at all" influential.

5.3 Open-ended responses

Responses to the open-ended questions about land owner values and benefits revealed a variety of results which both matched with fixed responses and revealed new aspects. Open-ended questions can reveal more insight into a topic by allowing respondents to express their own frame of reference using their own words as opposed to choosing pre-determined and fixed responses (Bengston et al., 2011).

The frequencies in which concepts were mentioned as perceived benefits showed general categories that indicated benefits beyond what the closed-ended survey questions presented as options. Survey respondents when asked about what they found to be of benefit from becoming certified gave a variety of responses that coalesced around 4 major themes. The concepts cited in order from most mentioned involved “community support,” “learning through professional support,” “making a difference,” and “recognition” for practicing responsible forest stewardship.

Frequencies of concepts reported in the motivating factors showed 2 dominating themes that emerged from the responses to the open-ended question about the perceived value of certification. These themes were categorized as “social values” and “environmental values”. Statement related to conservation and environmental protection were identified 18 times. Statements regarding social networks were cited 10 times. The third most frequently cited theme involved recognition, also a social concept, and was cited 7 times.

When asked to respond to open-ended questions about the experienced benefits respondents get from being certified, the most frequently given answers were 14 replies about community support, 9 replies about technical support from professionals, 7 replies

regarding land-ethic or making an environmental difference, and 7 responses for receiving recognition from others. There seems to be an obvious social benefit from being in this group if you are a tree farmer with a smaller property.

Based on the reported motivations and benefits of tree farmers, the findings imply that ATFS certified NIPF landowners manage for non-economic benefits. This suggests that family forester relationships with their land is of a social nature and forests are perhaps maintained for both personal and altruistic reasons. The activities tree farmers are managing for included “planting” and “wildlife.” These were 2 of the most commonly cited examples of topics farmers have made changes regarding in their management activities. When asked about the changes they have made since certifying, other than not making any changes, farmers are reporting to be managing for their stand health and for wildlife mainly. These activities point toward NIPF forest landowners taking on a “landscape perspective” by seeing beyond their own economic interests (Erickson et al., 2002).

Schubert and Mayer (2012) demonstrated in analyzing results from the NWOS that open-ended questions revealed more depth and caught subtleties that closed-ended question missed. A study by Bengston et al. (2011) found that closed-ended questions failed to capture many motivations in NIPF landowners. From the open-ended question about motivation to certify in this thesis, landowners revealed motivating factors that the closed-ended questions failed to identify. Conservation values were addressed in the fixed-responses, and recorded as the most common response to open-ended values, but second to this was a concept not included in the fixed-response questions. The value of social interactions was made apparent through the coding of responses during the data

analysis phase of this research, making this an inductive process. The results from the concept of social value went beyond just a learning benefit and included context indicating an exchange of ideas and a focus on 2-way communication—a social network. This is perhaps the most valuable and beneficial component of forest certification for not just landowners, but from perpetuating ecosystem services for everyone into the future.

5.4 Implications for sustainable forest management

The influence of property size is significant because of the trend in land being subdivided and fragmentation. Larger landowners reporting economic activity as greatly beneficial would imply that they are actively harvesting timber regularly. Studies have shown that owners with more land are more likely to harvest (Butler & Leatherberry, 2004; Knoot & Rickenbach, 2011). A correlation with size and harvesting would imply that as property parcels are reduced that landowners are less inclined to harvest timber, and potentially less likely to seek assistance and therefore unlikely to utilize programs such as forest certification, which have been shown to increase the quality of forest management through landowner education. Research by Butler and Ma (2011) provides evidence that smaller parcel size makes sustainable forest management more difficult to practice.

This would however contradict research by Kilgore, Snyder, Schertz, and Taff (2008b) that found through surveys that large landowners were no more likely to certify than small landowners. However, Knoot and Rickenbach (2011) demonstrated that owning more land correlated with more involvement in sustainable forest management programs.

Prior research provides evidence that larger social networks provide a greater diversity of information to landowners (Sagor & Becker, 2014) and greater awareness is related to increased participation in certification programs, which ultimately increases the quality of forest management (Kilgore et al., 2008b).

The benefit of access to information and support for managing their tree farm was also reported higher by newer landowners. This benefit that certification offers landowners appears to be a strength of the ATFS certification program, especially due to the forecasted influx of new landowners as the aging majority of NIPF landowners continues to transfer land to successors. With an increase of new owners, with potentially different management goals, certification could connect new cohorts of owners with resources to assist and positively influence these individual owners that combine to make the landscape US forests.

Kilgore et al. (2008b) found that landowners who had heard of certification were more likely to participate. Sagor and Becker (2014) showed evidence that diverse networks were positively correlated with increased best management practices and that certification programs increased peer-to-peer networks for landowners, thereby increasing the knowledge and awareness of management options. Kilgore et al. (2007a) found that landowner participation in programs that offered technical assistance and planning assistance consistently elevated the quality of forest stewardship.

The increased quality of forest management may relate to a well-known theory in landowner conservation education. Everett Rodgers Diffusion of Innovations Theory states that learning by observing the behavior of neighbors and through interactions with

trusted people can increase the technical skills of the observers and ultimately lead to adoption of conservation behaviors (Sagor & Becker, 2014).

The only substantial difference this research found between new landowners and those who had their farms longer was the desire for information and support. Newer landowners were more motivated to certify and reported a higher benefit from “access to information and support.” Although Knoot and Rickenbach (2011) found that time of ownership was associated with best management practices, tenure was not associated with participation in sustainable forest management programs. This news is hopeful, because the impending shuffling of land from an older generation to the next could imply a loss of this type of quality in a large percentage of forests under this assumption that tenure equates to positive practices. Given that new owners are interested to seek out programs to assist them, which also have the potential to guide their management in a positive direction, then certification should indeed target the growing category of new owners that are less likely to be tree farmers (Butler & Ma, 2011) to offset the shifting patterns in ownership structure and changing social values (Butler & Leatherberry, 2004), which will likely have a great impact on the quality of forests and the services they provide. Because new landowners are less likely to be influenced by neighbors (Schubert & Mayer, 2012), certification has the potential to connect them with a network that has the resources that can positively influence their management goals and practices. This research shows that 21% of landowners had made changes in their forest management practices since becoming certified. These were all reported by the smaller of the NIPF categories.

6. Conclusion

A detailed understanding of tree farmer values and the benefits they experience from certification is needed to continue to support and grow the number of certified forests and increase the quality of forests across Washington State. Using open-ended survey questions to collect qualitative data both reinforced the quantitative data collected and provided a deeper level of understanding about what tree farmers are motivated by and manage for. This approach could be used in future surveys that seek to understand issues relating to increasing sustainability in forests.

This survey both identified motivating factors and attempted to measure the strength of each motivation. Motivations can change depending on person's life circumstances. This survey captured attitudes about what motivated farmers to certify with a program that has been around for over 75 years. In some cases, farmers who have been part of the tree farm program for over 50 years, reported their perceived value about certification from when they joined. This study presumes that the values reported in this survey still reflect the values tree farmers held when they initially certified.

From the research, a trend was shown in the degree of change tree farmers make to adjust their management to the standards required to become certified. Tree farmers reported making changes more frequently as the size of their farms decreased. This size selective pattern brings into question potential of differences in both resource access and knowledge between small and large landowners.

The implications for the difference in changes made to certify reported between small and large landowners suggests there are more barriers to certifying forest land as acreage is reduced. If so, there is a potential that as land is passed down, inherited by the

heirs of tree farm acres, or sold off, it will subject to division. By this logic of increasing barriers to certification with reduced acreage, certification may become more challenging for programs like these to achieve.

Works Cited

- Bengston, D. N., Asah, S. T., & Butler, B. J. (2011). The diverse values and motivations of family forest owners in the United States: an analysis of an open-ended question in the National Woodland Owner Survey. *Small-Scale Forestry*, 10(3), 339-355.
- Blackman, A., & Rivera, J. (2011). Producer-level benefits of sustainability certification. *Conservation Biology*, 25(6), 1176-1185.
- Bliss, J. C. (2003). Sustaining family forests in rural landscapes: Rationale, challenges, and an illustration from Oregon, USA. *Small-Scale Forestry*, 2(1), 1-8.
- Bliss, J. C., & Martin, A. J. (1989). Identifying NIPF management motivations with qualitative methods. *Forest Science*, 35(2), 601-622.
- Bouslah, K., M'Zali, B., Turcotte, M.-F., & Kooli, M. (2010). The impact of forest certification on firm financial performance in Canada and the US. *Journal of Business Ethics*, 96(4), 551-572.
- Butler, B. J. (2008). Family forest owners of the United States, 2006. Gen. Tech. Rep. NRS-27. U.S. Department of Agriculture, Forest Service, Northern Research Station, 72.
- Butler, B. J., & Leatherberry, E. C. (2004). America's family forest owners. *Journal of Forestry*, 102(7), 4-14.
- Butler, B. J., Leatherberry, E. C., & Williams, M. S. (2005). Design, implementation, and analysis methods for the National Woodland Owner Survey. Gen. Tech. Rep. NE-336. U.S. Department of Agriculture, Forest Service, Northeastern Research Station.
- Butler, B. J., & Ma, Z. (2011). Family forest owner trends in the Northern United States. *Northern Journal of Applied Forestry*, 28(1), 13-18.
- Butler, B. J., Tyrrell, M., Feinberg, G., VanManen, S., Wiseman, L., & Wallinger, S. (2007). Understanding and reaching family forest owners: lessons from social marketing research. *Journal of Forestry*, 105(7), 348-357.
- Cashore, B., Auld, G., & Newsom, D. (2003). Forest certification (eco-labeling) programs and their policy-making authority: Explaining divergence among North American and European case studies. *Forest Policy and Economics*, 5(3), 225-247.
- D'Amato, A. W., Catanzaro, P. F., Damery, D. T., Kittredge, D. B., & Ferrare, K. A. (2010). Are family forest owners facing a future in which forest management is not enough? *Journal of Forestry*, 108(1), 32-38.
- Daniels, S. E., Kilgore, M. A., Jacobson, M. G., Greene, J. L., & Straka, T. J. (2010). Examining the compatibility between forestry incentive programs in the US and the practice of sustainable forest management. *Forests*, 1(1), 49-64.
- Dillman, D. A., Tortora, R. D., & Bowker, D. (1998). Principles for constructing web surveys. SESRC Technical Report, 98-50.
- Egan, A., & Jones, S. (1993). Do landowner practices reflect beliefs? Implications of an extension-research partnership. *Journal of Forestry* 91(10): 39-45.
- Erickson, D. L., Ryan, R. L., & De Young, R. (2002). Woodlots in the rural landscape: Landowner motivations and management attitudes in a Michigan (USA) case study. *Landscape and Urban Planning*, 58(2), 101-112.

- Ferranto, S., Huntsinger, L., Stewart, W., Getz, C., Nakamura, G., & Kelly, M. (2012). Consider the source: The impact of media and authority in outreach to private forest and rangeland owners. *Journal of Environmental Management*, 97, 131-140.
- Hayward, J., & Vertinsky, I. (1999). High expectations, unexpected benefits: What managers and owners think of certification. *Journal of Forestry*, 97(2), 13-17.
- Jones, S. B., Luloff, A. E., & Finley, J. C. (1995). Another Look at NIPFs: Facing Our. *Journal of Forestry*, 93(9), 41-44.
- Kilgore, M. A., Greene, J. L., Jacobson, M. G., Straka, T. J., & Daniels, S. E. (2007a). The influence of financial incentive programs in promoting sustainable forestry on the nation's family forests. *Journal of Forestry*, 105(4), 184-191.
- Kilgore, M. A., Leahy, J. E., Donnay, J. S., Hibbard, C. M., & Blinn, C. R. (2007b). Evaluating logger certification attitudes and preferences: A Minnesota case study. *Forest Products Journal*, 57(1/2), 84.
- Kilgore, M. A., Snyder, S., Taff, S., & Schertz, J. (2008a). Family forest stewardship: Do owners need a financial incentive? *Journal of Forestry*, 106(7), 357-362.
- Kilgore, M. A., Snyder, S. A., Schertz, J., & Taff, S. J. (2008b). What does it take to get family forest owners to enroll in a forest stewardship-type program? *Forest Policy and Economics*, 10(7), 507-514.
- Knoot, T. G., & Rickenbach, M. (2011). Best management practices and timber harvesting: The role of social networks in shaping landowner decisions. *Scandinavian Journal of Forest Research*, 26(2), 171-182.
- Ma, Z., Butler, B. J., Kittredge, D. B., & Catanzaro, P. (2012). Factors associated with landowner involvement in forest conservation programs in the US: Implications for policy design and outreach. *Land Use Policy*, 29(1), 53-61.
- Moore, S. E., Cubbage, F., & Eicheldinger, C. (2012). Impacts of forest stewardship council (FSC) and sustainable forestry initiative (SFI) forest certification in north America. *Journal of Forestry*, 110(2), 79-88.
- Nussbaum, R., Garforth, M., Scrase, H., & Wenban-Smith, M. (2001). An analysis of current FSC accreditation, certification and standard-setting procedures identifying elements which create constraints for small forest owners. Proforest. Oxford, UK.
- Oswalt, N. S., & Smith, W. B. (2013). US forest resource facts and historical trends. FS-1035. US Department of Agriculture, Forest Service, 56pp.
- Overdeest, C., & Rickenbach, M. G. (2006). Forest certification and institutional governance: An empirical study of forest stewardship council certificate holders in the United States. *Forest Policy and Economics*, 9(1), 93-102.
- Rametsteiner, E., & Simula, M. (2003). Forest certification—an instrument to promote sustainable forest management? *Journal of Environmental Management*, 67(1), 87-98.
- Rickenbach, M., Zeuli, K., & Sturgess-Cleek, E. (2005). Despite failure: The emergence of “new” forest owners in private forest policy in Wisconsin, USA. *Scandinavian Journal of Forest Research*, 20(6), 503-513.
- Sagor, E. S., & Becker, D. R. (2014). Personal networks and private forestry in Minnesota. *Journal of Environmental Management*, 132, 145-154.

- Sampson, N., & DeCoster, L. (2000). Forest fragmentation: Implications for sustainable private forests. *Journal of Forestry*, 98(3), 4-8.
- Schubert, J. R., & Mayer, A. L. (2012). Peer influence of non-industrial private forest owners in the Western Upper Peninsula of Michigan. *Open Journal of Forestry*, 2(03), 150.
- Strauss, A., & Corbin, J. (1998). Basics of qualitative research. Thousand Oaks.
- Washington Tree Farm Program. (2017). Who we are. Retrieved from watreefarm.org.
- Washington Tree Farm Program. (2017). Get certified. Retrieved from watreefarm.org
- Zhang, Y., Zhang, D., & Schelhas, J. (2005). Small-scale non-industrial private forest ownership in the United States: Rationale and implications for forest management. *Silva Fennica*, 39(3), 443.

Appendices

Appendix A: Washington Tree Farm Program Survey

The Executive committee recently began implementation of the tree farm Strategic plan. Part of that strategic plan was to establish a Technical Committee designed to work towards better supporting tree farmers and inspectors through education, interpretation and technology.

To improve resource support for tree farmers specifically, we have developed the following questionnaire regarding tree farmer thoughts and needs on current and additional technical resources as well as questions that would like your opinions on how tree farm certification has effected the way you manage your tree farm. We are seeking input to develop useable, practical and realistic tools, training and opportunities to enhance the information and opportunities for tree farmers in managing their tree farms.

There are 44 questions and takes about 30 minutes to complete. We know that you are all very busy people but ask that you please take the time to respond to this questionnaire as it important to our understanding of how the Technical and State Committee may better serve you in the future.

Please mark the answer boxes or write-in responses where indicated for the following questions;

1) How did you first find out about the tree farm certification program?

- Through consulting foresters you were working with
- Through other tree farmers
- I saw a Tree Farm sign along the road
- Through a WSU or DNR class or forester
- Other (Please specify): _____

2) How many acres of timber do you manage on your farm(s)?

- Between 10 and 49
- Between 50 and 99
- Between 100 and 299
- 300 or more

3) How long have you owned your tree farm?

- 0-5 years
- 6-10 years
- 11-25 years
- 26-50 years
- Greater than 50 years

4) How long has your tree farm been certified?

- 0-5 years
- 6-10 years
- 11-25 years
- 26-50 years
- Greater than 50 years

5) Please read the following three statements and mark whether each statement describes you.

a) I managed my tree farm to certification standards **before** becoming certified. Yes No

b) I had to change a lot of things about the way I manage my tree farm to **become** certified. Yes No

c) I have changed a lot of things about the way I manage my tree farm **since** becoming certified. Yes No

6) What changes did you make to your operation to become certified?

7) What changes have you made to your operation since becoming certified?

8) Please rate the degree to which factors listed below influenced your decision to become certified by marking one of the three options for each.

	Not at all	Somewhat	Greatly
a) Demand for certified forest products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Access to information and support for managing operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) A personal sense of responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Higher prices paid for certified forest products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Public recognition for responsible forest management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Access to new markets to sell timber products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Public pressure to certify from community or groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9) What other factors not mentioned influenced your decision to certify?

10. Please rate the degree to which you find each of these aspects of certification to be beneficial by marking one of the three responses for each.

	Not at all	Somewhat	Greatly
a) Access to new buyers of forest products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Higher prices paid on certified forest products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Access to information and support for managing operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Public recognition for responsible forest management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11) Is there anything else you find beneficial?

12) Do you currently utilize the Washington Tree Farm or the National Tree Farm program website for technical support to help you manage your tree farm?

- I use it a lot
- I use it a little
- I don't use it at all

13) What do you find most useful and/or valuable on the websites?

14) What improvements could be made to the website to make it more useful for you?

15) Are there other tools in addition to what is currently offered on the website that would help in accessing information related to tree farming?

16) Have you utilized My Land Plan and its tools to manage your woodlands or to develop your plan?

- Yes I actively use it
- Yes I have tried it but don't use it regularly
- No I don't use it
- No I have never heard of it

17) If you have used "My Land Plan", are there things you would like to see improved so make it more valuable? For example, right now "My Land Plan" will not print the maps you can create. What feature(s) would you like to see made available in "My Land Plan"?

18) What topics of information are most valuable to you in managing your tree farm? Please rank in order of importance from 1 – 7, with 1 being the most important and 7 being the least important.

- _____ Maximize value of timber
- _____ Wildlife habitat
- _____ Forest health
- _____ Legacy
- _____ Stand development
- _____ developing management plan
- _____ harvesting systems

19) What other topics would you find valuable?

20) What aspect of becoming a certified tree farm is most valuable to you? Please rank in order of importance from 1 – 6, with 1 being the most important and 6 being least important.

- _____ Developing management plan
- _____ Marketing of your forest products
- _____ Technical assistance/site visit
- _____ Recognition of your tree farm
- _____ Voice in policy making
- _____ Educational Opportunities

21) Are there any other aspects that you find helpful?

22) What element of the inspector's site visit is most valuable to you? Please rank in order of importance from 1 – 7, with 1 being the most important and 7 being the least important.

- _____ discussing how my forest meets or exceeds sustainability standards.
- _____ Management recommendations/opportunities
- _____ Consultant/Silvicultural Contractor recommendations
- _____ Stand inventory
- _____ Educational
- _____ Management plan review
- _____ Learning tools that might be utilized in managing my property

23) Are there any other helpful elements you get from the inspector's visit?

24) What, if any, improvements can be made to improve site visits?

25) Are there specific resources that would be helpful for inspectors to bring along during site visits? Please rank in order of importance from 1 – 8, with 1 being the most important and 8 being the least important.

- _____ DNR Delivered Log Price List
- _____ List of local mills / log buyers
- _____ List of online tree farming resources (websites)
- _____ Consultant/Silvicultural Contractor list
- _____ Forest Practices Illustrated
- _____ Standards and guidance pamphlet
- _____ Forestry Publications
- _____ Forest Management Plan template

26) Are there any other resources that would be helpful if brought out to your site?

27) What is the best platform for you to receive information? Please rank in order of importance from 1 – 5, with 1 being the most preferred and 5 being the least preferred.

_____ Online / Websites
_____ Brochures and Paper
_____ Field Days
_____ Webinars
_____ Local Meetings / Conferences

28) Are there any other ways you prefer to receive information from us?

29) What is the best way to contact you? Mark all that apply.

Email
 Snail Mail
 Phone
 Other (Please specify): _____

30) Do you know about the Tree Farmer of the Year program and the process to get your tree farm considered for this honor?
Yes No

31) Would you like to receive information about how to be considered for the Tree Farmer of the year?
Yes No

32) Do you have any other suggestions or comments that would assist the technical committee in better serving you and providing the resources necessary to help you meet your forestland objectives and the ATFS standards of sustainability?

33) What types of specialists do you utilize in managing your tree farm? Mark all that apply.

consulting foresters and natural resource specialists
 Conservation foresters and natural resource specialists
 Department of Natural Resource Foresters and/or WSU Extension Foresters and natural resources specialists
 Friends and fellow tree farmers
 Other (Please specify) _____

- 34) How often do you utilize them?
 1-3 times per year
 3-5 times per year
 More than 5 times per year
 I sign long term contracts for professional services
 This does not apply to me
- 35) Do you know about state government services such as the Small Landowner office and what they can provide?
Yes No
- 36) Are you familiar with some of the services provided by the Small Forest Landowner Office? Mark all that apply.
 Forest Riparian Easement Program
 Riparian Habitat Open Space Program
 Family Forest Fish Passage Program
 Coached Planning Courses
 Forest Stewardship Foresters
- 37) Have you attended a field day or other type of seminar? Yes No
- 38) If so, what was the most valuable topic addressed?

- 39) If not, what topic(s) would you like to see presented?

- 40) Would you like to receive a summary of this research? Yes No
- 41) Name _____
- 42) If so, please include preferred email address _____
- 43) Would you be willing to participate in either a phone or in-person interview as part of a field visit to your location in order for us to extend this research?
Yes No
- 44) If so, please include a phone number so we may reach you _____

Thank you very much for participating!

Appendix B: Invitation to participants

Letter to Subject for Interviews

Dear Participant:

I am a student at The Evergreen State College. As part of my graduate studies thesis project, I will be conducting a research project titled "An Assessment of the Benefits of Forest Certification to Non-Industrial Private Landowners in Washington State." The purpose of my project is to gather information about the experiences of certified forest landowners for a master's thesis and presentation. I would like to conduct an audio-recorded interview of you about your experience with certification. The interview should take roughly 30 minutes.

Any risks to you are minimal. There will be no compensation of any kind available for your participation, which is completely voluntary. You may withdraw your participation at any point or skip any question you do not wish to answer without penalty.

I will keep the digital audio recording of our interview in a password-protected computer accessible only by me. I may share part or all of this recording with my faculty sponsor, Dr. Edward Whitesell, but no one else will hear it. Upon completion of the project, I will destroy the digital file.

As mentioned above, I will use your responses as resource material for my master's thesis on non-industrial private landowner forestry certification. At your request, I will provide you with a copy of the final draft. The thesis will be read by my faculty advisor and I will make a public presentation about it at The Evergreen State College. Material from my thesis may be used in the future for articles in magazines, journals, or conference presentations. I may report your answers in my thesis, but I will keep your identity confidential and not reveal any identifying information about you in my final thesis and presentation. I also plan to submit my thesis to the American Tree Farm Systems organization.

If you have any questions about this project or your participation in it, you can call me at 360-481-4304. My email address is peikandersen@gmail.com. The person to contact if you have questions concerning your rights as a research subject or experience problems as a result of your participation in this project is John McLain, IRB administrator at The Evergreen State College, Library 2211, Olympia, WA 98505; Phone 360-867-6045.

Thank you for your participation and assistance!

Sincerely,

Peik Andersen

Appendix C: Research subject consent form to participate

"An Assessment of the Benefits of Forest Certification to Non-Industrial Private Landowners in Washington State"

I, _____, hereby agree to serve as a subject in the research project titled "An Assessment of the Benefits of Forest Certification to Non-Industrial Private Landowners in Washington State". It has been explained to me that its purpose is to gather information about the benefit of forest certification on non-industrial forest landowners. The research activity I will participate in is an approximately 30-minute audio-recorded interview.

I have been informed that the information I provide will only be listened to and used for a master's thesis and presentation by Peik Andersen to satisfy requirements of the Master of Environmental Studies Program at The Evergreen State College. I also understand that my responses may be reported in the thesis, future publications, and presentation, and my identity will be kept confidential and no identifying information about me will be included. Peik Andersen has agreed to provide, at my request, a copy of the final draft of his thesis. Peik Andersen has also informed me that the thesis may also be presented to the American Tree Farm Systems.

I understand that the risks to me are minimal. I agree to be interviewed, and to have that interview audio recorded for this project. I have been told the recording will only be heard by Peik Andersen and his faculty and will be destroyed when the project is finished.

There will be no compensation of any kind available for my participation. I have been told that I can skip any question or stop the interview and withdraw my full participation from the study at any time without penalty. If I have any questions about this project or my participation in it, I can call Peik Andersen at 360-487-4304, or email him at peikandersen@gmail.com. Likewise, the person to contact if I have questions concerning my rights as a research subject or I experience problems as a result of my participation in this project is John McLain, IRB administrator at The Evergreen State College, Library 2211, Olympia, WA 98505; Phone 360-867-6045.

I understand that my participation in this project is completely voluntary, and that my choice of whether to participate in this project will not jeopardize my relationship with The Evergreen State College. I am free to withdraw at any point before or during the interview. I have read and agree to the foregoing.

Signature _____ Date _____