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Motivations for and Barriers to Forest Certification of Washington State Trust Lands

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Motivations for and Barriers to

Forest Certification

of Washington State Trust Lands

By

Tracy M. Petroske

Accepted in Partial Completion
of the Requirements for the Degree
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Master's Thesis

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Tracy M. Petroske

February 10, 2023

Motivations for and Barriers to

Forest Certification

of Washington State Trust Lands

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

by
Tracy McCallister Petroske
February 10, 2023

Abstract

Forest management certification is a system to assess whether forests are grown in a manner that complies to a pre-determined set of requirements. Certification programs (called "Standards") are designed to indicate that compliance to those conditions demonstrate the forest is managed in a way that is environmentally responsible, economically viable, and socially beneficial. In the United States, there are two recognized forest certification programs: the Forest Stewardship Council® (FSC®) and the Sustainable Forestry Initiative® (SFI®). The Washington State Department of Natural Resources (DNR) certifies 100% of their forested trust lands to the SFI Standard. Of those lands, 8% are dual certified to both SFI and FSC. This study explores why SFI is the dominant certification program at DNR, what motivates the decisions to certify to one standard or both, and what barriers exist to certification to a preferred standard. Interviews with DNR personnel were used to generate data for grounded theory content analysis. This allowed construction of theories as to the motivation for and barriers to forest certification of DNR-managed lands in Washington state.

The research suggests that DNR personnel believe forest certification is a valuable operating procedure primarily because of the positive ecological and socially responsible message it sends to the public. It also finds that DNR personnel greatly prefer certification to the SFI Standard over FSC because of SFI's relative procedural simplicity. FSC was found burdensome to implement, primarily due to paperwork processes and the necessity of engaging with FSC-International. However, having an existing Habitat Conservation Plan in place to meet requirements of the federal Endangered Species Act, makes compliance to the FSC Standard somewhat easier because documentation of environmental and operational procedures is already

completed. Respondents to this study commonly stated they did not want to see coverage of FSC-certified lands expanded despite some environmentalist pressure to do so.

These findings cannot directly be applied to federally- or privately-owned landowners, both of whom are likely to have very different motivations and barriers than a state-owned and state-managed agency. Recommendations for further research include a study similar to this in which data is gathered from stakeholders, such as harvesters, sawmill owners, and trust beneficiaries. Because public pressure is a major motivation for forest certification, the opinions of other parties, such as environmental groups, and members of the Board of Natural Resources (BNR) would also be of importance.

Acknowledgements

I would like to express gratitude to the many unnamed DNR employees who took time to talk with me about their work, and inevitably share their passions for the trees and owls and waterways of the Pacific Northwest.

I am honored to have worked with Grace Wang, my advisor and a consummate mentor. Thank you for launching me on this path, steering me straight, and always welcoming me with a smile. I am grateful, too, for my committee members, John Tuxill and David Wallin. I am fortunate to have had these brilliant people guide my thoughts, ask questions, and share in conversation that I wish could last three times longer. Thank you for your insights and time.

Thank you to Ed Weber and the staff that cheerfully answered every question and addressed every need in a remarkably speedy fashion throughout my graduate school experience.

Thank you, too, to Timothy J. Boyd, who left this world too soon, but still fills my heart and thoughts, and listened as I read these chapters aloud. Gus am bris an latha.

Finally, I feel deep gratitude to my family – Matt, Lydia, and Joe – for supporting me, teasing me, listening to me, and being my best friends and outdoor play-partners… all so I could live contentedly while simultaneously focusing on this work. My heart is full. Thanks for that.

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Acronyms and Vocabulary

CoC – Chain of Custody

DNR – Department of Natural Resources

FSC – Forest Stewardship Council (*a U.S.A. recognized forest certification program*)

HCP – Habitat Conservation Plan

PC – Pacific Cascade

PNW – Pacific Northwest

SFI – Sustainable Forestry Initiative (*a U.S.A. recognized forest certification program*)

SIC – SFI Implementation Committee

SPS – South Puget Sound

TLA – Trademark License Agreement

Signaling – ecolabel jargon to describe how certification is an indirect message to the public that a producer exercises environmentally- and socially-responsible manufacturing processes.

Positionality Statement

This work focuses on factors that might influence decision-makers at the Washington State Department of Natural Resources (DNR) to seek and maintain certification of the state forest trust lands under agency management. At the time I started my graduate work at Western Washington University, I had not yet heard of forest certification but quickly became interested in understanding what motivated the timber industry to pursue either or both of the two U.S.A. approved programs. I chose to examine certification of publicly-owned land in Washington state.

In my first year of this work, I contacted the DNR Certification Project Manager for information and suggestions for additional contacts. Several months later, this individual informed me of a newly opened position at DNR to support the forest certification process and coordinate scientific research in the Olympic Experimental State Forest. I was hired to fill that role and began working for DNR at the end of my first year of graduate school. I continue in that role today.

This work remains impartial and unbiased. My position at DNR has greatly enhanced the veracity of the work herein, without loss of objectivity. I have had the fortune of deeply examining the metrics and evidence for both certification programs, and helped prepare and participate in multiple weeks of forest certification audits throughout the state. This rich context has considerably added to the robustness of the analysis and conclusions. It has been a journey of discovery.

Chapter 1. Introduction

Introduction: the History of Deforestation

Humans have been altering forest landscapes for many centuries; harvesting timber, setting controlled burns, and creating farmland and livestock grazing areas (Williams, 2003). In Deforesting the Earth: from Prehistory to Global Crisis, Michael Williams writes, "*Every society in every age has used wood for fuel to keep warm, to prepare food, and to provide shelter… controlled fire being perhaps coterminous with the emergence of Homo erectus some five hundred thousand years ago… But other human activities that affect the forest are more complex: agriculture, smelting, shipbuilding, trade, war, territorial expansion, and an attitude of either aversion to or reverence for trees*…" (Williams, 2003, p. xxii).

By the 1700s, some European countries were beginning to recognize the impacts of rampant cutting and other damaging forest management practices (e.g., understory removal, coppicing, and grazing) (Williams, 2005; Farrell et al., 2000). In response, scientific forestry education programs began in Germany and France to curb some of the damage (Farrell et al., 2000). And yet, a century later in the U.S., forestlands were rapidly being cut to enable westward expansion. Timber barons and railroad magnates saw the forests as a "*plunderers' bounty*" (Egan, 2010, p. 28) — embracing a cut-and-run philosophy founded on a belief that forest resources were in endless supply (Bramwell, 2012; Egan, 2010). Exploitation was the "*spirit of the times, with little regard for the ethics of conservation or the needs of the future*" (Williams, 2005, p. 3). The volume of timber being cut greatly exceeded the ability of forests to regrow, causing rapid degradation of forest health (MacCleery, 2016). And, in many places, the forest was not intended to regrow at all. Instead, those lands were being deforested entirely; cutover and abandoned, or

converted to agricultural or municipal use (MacCleery, 2016; Williams, 2005; Bramwell, 2012) (***Fig. 1***).

Figure 1: *Cutover forestland in northern Michigan, early 20th century. Photo from MacCleery, 2016.*

As early as the turn of the 20th century, it was evident that uncontrolled cutting and related impacts to wilderness were not sustainable (Egan, 2010; Williams, 2005). Survey reports sent from field scientists to U.S. President Theodore Roosevelt and U.S. Forest Service Chief Gifford Pinchot signaled a shift from viewing natural resources as being limitless to instead voicing concern with the rapidity of their loss (Williams, 2005; Dietrich, 1992). At that time, U.S. wildfires were consuming 20-50 million acres of forestland per year (MacCleery, 2016). Cut-and-run logging had left behind 80 million acres of abandoned cutovers. In Mississippi alone,

forest cover dropped from 70% of the state to less than 20% in a matter of decades (MacCleery, 2016).

Regional and global events continued to shape and shift societal attitudes about usage versus conservation of natural resources, sometimes leading to deep harvesting and at other times leading to reforestation efforts. World War I increased demand for timber; strong, clear, lightweight wood was desperately needed for airplanes. Sitka spruce trees, growing only in the Pacific Northwest and Alaska were the ideal stock, spurring the development of railroad lines and logging roads throughout wooded regions (Swanson, 2020; Crosman, 2011; Williams, 1999).

World War II and the Great Depression left the world with a dire need for jobs. Millions of men, and sometimes women, were put to work in the Civilian Conservation Corps (Dietrich, 1992), working on projects such as the Shelterbelt, an extensive tree-planting effort to create windbreaks after the Dust Bowl (Dietrich, 1992).

The advent of, and increase in, media played a role (Griffin, 2017). Publications such as Aldo Leopold's *Sand County Almanac* in 1949 and Rachel Carson's *Silent Spring* in 1962 outraged the public with fears of industrial air and water pollution and use of pesticides (MacCleery, 2016; Anguish, 2015). As early as the 1960s, media companies were increasingly purchased by large conglomerates, increasing the reach of broadcast news networks (Griffin, 2017). Correspondingly, there was an increase in the ease of coverage of global news, including stories about destruction of tropical rainforests, loss of biodiversity, and impending extinction of plant and animal species that held potential to cure a variety of human diseases (Griffin, 2017; Anguish, 2015).

Deforestation, especially of tropical rainforests, became a rising global concern in the late 1980s and 1990s (Rudel and Roper, 1997). Government-driven methods such as economic sanctions against countries that were razing tropical rainforests were implemented (Ozanne and Smith, 1993). Consumers began to boycott products from those countries (Vincent, 1990). And yet, neither regulatory methods nor social pressure were able to slow or prevent forest loss. In fact, those methods were often counterproductive: for instance, economic sanctions and boycotts of forest products caused the price for wood products to fall, and as a result, further devalued forestland. This made it even more likely for forests to be cut down and the land converted to other uses (Ozanne and Smith, 1993; Vincent, 1990).

In 1992, the first Earth Summit, formally called the United Nations Conference on the Environment and Development, was held in Rio de Janeiro. On center stage was the plight of worldwide forests. After several days of meetings, a number of non-binding recommendations were made. One of these was a suggestion to encourage third-party auditors to certify lands that were being sustainably managed, and to include the development of criteria and metrics thereof (MacCleery, 2016).

Literature Review I: Green Certifications and Ecolabels

The concept suggested through the Earth Summit of independent — third-party auditors to certify "sustainable" practices — was not new. The first market-based, voluntary ecolabel certification (Blue Angel) was established in Europe in the late 1970s to feature products that used environmentally- and socially-responsible manufacturing processes (Rubik et al., 2020). In industry jargon, certification became a "signaling mechanism" (Rubik et al., 2020; Cashore et al., 2005), serving as an indirect message to the public that a company exercises sustainable practices.

A variety of ecolabels in a wide range of industries followed over the next few decades. Ecolabels appeared in the U.S. when government agencies began to legislate the energy output of appliances and fuel consumption of vehicles in the late 1980s. Due to consumer demand for "green" merchandise, the percentage of new products in the U.S. with "eco-friendly" claims increased tenfold over 4 years: from 1.1% of new products being certified in 1986 to 11.4% in 1990 (Banerjee and Solomon, 2001).

Most green labels are generally aimed at providing consumers with a simple means to support environmental resource conservation and fair working conditions (Melser and Robertson, 2005). But opinions about what constitutes sustainability, or even fair labor, can differ widely. The present-day commonality of ecolabels, combined with wide variation in certification requirements, often leads to consumer distrust and disagreement over the validity of certification claims (Melser and Robertson, 2005; Furlow, 2010; Banerjee and Solomon, 2001). In response to the boom in ecolabeling and resultant consumer skepticism, the U.S. Federal Trade Commission issued guidelines for green marketing campaigns, similar to the parameters for health and safety labels on food or pharmaceuticals (Banerjee and Solomon, 2001; Melser and Robertson, 2005).

Today, government approved ecolabels and certification stamps can be found on a wide variety of consumer products such as food, clothing, appliances, and lumber. Examples include Energy Star, Rainforest Alliance, Fair-Trade Certified, and Dolphin Safe (***Fig. 2***).

Figure 2: *Common ecolabels. Not all ecolabels require certification for use.*

But not all ecolabels are created equal. The International Organization for Standardization (ISO) has developed a categorization for ecolabels. For instance, ISO-Type-II labels are self-declared by a company to indicate they use environmentally-friendly processes (ISO, n.d.). Other ISO-type labels, called certifications, require a neutral third-party to audit procedures and certify that a product meets quantifiable environmental declarations (ISO, n.d.).

It is often impossible to directly measure the impacts of an ecolabel, but many ecolabels and certification programs are correlated to positive, intended outcomes (Garzon et al., 2020; Moore et al., 2012; Tiesl et al, 2003). For instance, the Dolphin Safe label was created in response to public outcry over dolphins inadvertently caught in tuna-fishing nets. The Dolphin Safe stamp cannot be directly credited with reduction of dolphin bycatch, but companies wanting to use the Dolphin Safe label were required to change fishing methods (Tiesl et al., 2003; Dolphin Safe, n.d.). The timing of that modification is highly correlated to a drastic reduction in measured dolphin deaths (Tiesl et al., 2003). Fisheries observers report a dramatic reduction in dolphin mortality, from 80,000-100,000 per year in the 1980s (prior to the Dolphin Safe label) to less than 1000/year in 2015 (Tiesl et al., 2003).

Literature Review II: The Development of Forest Certifications

Public pressure was increasingly pushing for evidence of responsibly sourced forest products; certification with third-party auditing became a natural signaling mechanism (Cashore et al., 2005; Cashore et al., 2004). Based upon outcomes from other types of certification programs, it was presumed that a forest certification program would indirectly improve forest management practices and thereby slow deforestation (total loss of forestland) and reduce degradation of forest health (Cashore et al., 2004; FSC-History, n.d.). This prompted leaders at the 1992 Earth Summit conference to recommend development of a forest certification scheme.

Responding to that recommendation, several environmental non-governmental organizations and global retailers formed the world's first forest certification plan. In 1993, these combined environmental groups announced the world's first certification program, the Forest Stewardship Council® (FSC®). FSC is an "*independent, non-profit organization that protects forests for future generations*" (FSC-Who, n.d.) with objectives intended to advance conservation principles, combat the conversion of forests to agricultural or residential lands, and promote safe working conditions (FSC-History, n.d.).

One of the first U.S. companies to begin carrying FSC-certified wood was The Home Depot, a major building-supply provider (Fernholz et al., 2010). The company had been negatively impacted through consumer boycotts and, despite the cost of certification, hoped to rebuild their customer-base with consumers that expressed willingness to pay higher prices for sustainably-sourced products (Forsyth et al., 1999; Blend and Van Ravenswaay, 1999; Harris, 2007). Around the same period, the magazine publisher, Time, Inc., committed to using certified paper products (Fernholz et al., 2010). Other retailers, witnessing the environmental-friendly signaling and positive consumer response, followed suit, creating a demand for certified wood, pulp, and paper products in the U.S. (Forsyth et al., 1999; Fernholz et al., 2010; Auld et al., 2008).

Shortly after FSC was launched, the American Forest & Paper Association (AF&PA), a trade group representing high-end wood fiber producers, established the second forest certification program, called the Sustainable Forestry Initiative® (SFI®) as a less prescriptive alternative to FSC, allowing timber industry organizations to define their own principles and objectives (Garzon et al., 2020; Rametsteiner and Simula, 2003).

Even more competing forest certification programs, with differing requirements, were rapidly developed. The variety of programs, called "Standards," offered flexibility to timber producers

and manufacturers, but simultaneously led to disputes about the environmental credibility of each alternative. Nonetheless, forest certification programs today are often used as a signaling mechanism by which many land managers and owners demonstrate they meet defined standards for environmental and social responsibility (Tikina et al., 2008; Cashore et al., 2005).

Forest Certification Auditing

Accreditation and Audits

Certification under either SFI or FSC requires that forest management organizations meet specific criterion (generally called "performance measures"). They provide evidence of this during an annual surveillance audit by a credentialed, third-party organization (a "certifying body"). Auditors and agency personnel spend several days in the field, touring forestlands and observing conditions such as harvesting operations (before, during and after), bridge and road construction, streambeds, steep slopes, and recreation sites. In addition, they spend several days in office, reviewing policies and evidence of compliance to the performance measures. They thoroughly examine measures of success for environmental considerations such as animal habitat and water quality. Every fifth year, agencies undergo an even more in-depth recertification audit. In both the surveillance and recertification processes, auditors also conduct interviews with staff and stakeholders, such as forest workers, neighbors, and members of regional tribal nations. Any major or minor nonconformities must be rectified to maintain certification or recertify.

Forest Certification Terminology

Harvested trees and other wood products generally are transported from the forest to a sawmill, moved from there to a warehouse or wholesaler, and finally to a retailer. This is called a Chain of Custody (CoC) (***Fig. 3***). For a consumer to purchase a product with a forest certification stamp, the wood must have been sourced from a certified forest, and in addition,

every business in the chain of custody must also have been certified. However, businesses such as mills are not managing forests, but are instead handling already harvested forest products. Therefore, forest certification programs, such as SFI or FSC, have multiple "types" of forest certification standards. Both SFI and FSC have a "Forest Management" Standard for land-owners and land-managers. And both programs also have a "CoC" Standard for the businesses that are processing and moving forest products.

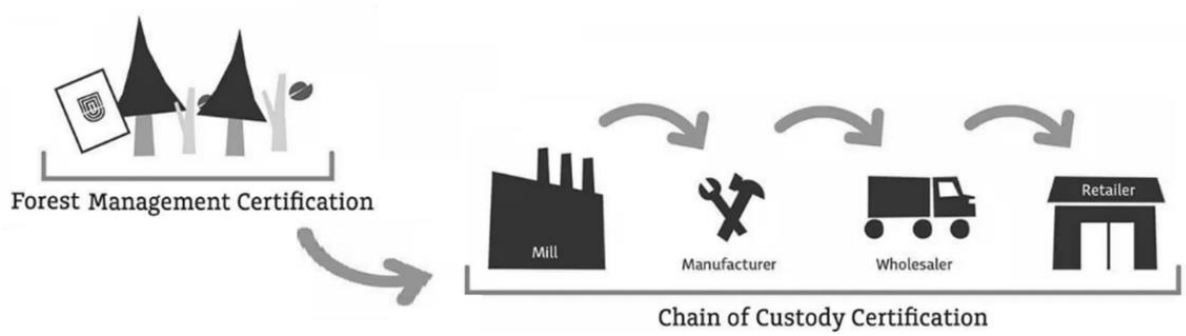

Figure 3: *Forest products follow a chain of custody from forest to consumer.*

This study focuses on Washington state public forest trust lands, managed by the Washington Department of Natural Resources (DNR). As the manager of forestlands, DNR certifies to the Forest Management "type" of certification and the agency does not certify to the CoC "type" of certification.

SFI has a single "trademark" or product stamp on certified merchandise. FSC, however, has three trademark stamps: FSC 100%, FSC Mix, and FSC Recycled (***Fig. 4***). These labels refer to the percentage of all of the forest-based material in a product. FSC 100% means all of the material is from FSC-certified sources. FSC Mix means at least 70% of the forest-based material came from FSC-certified forests or is recycled. FSC Recycled means all of the material comes from recycled or reclaimed sources, with a maximum of 30% from "pre-consumer" reclaimed waste (i.e., waste from manufacturing such as defective material or offcuts) (FSC-Connect, n.d.).

FSC-Mix allows a combination of FSC and SFI sourced materials to be moved through the chain of custody under the FSC-Mix label.

Figure 4: *FSC and SFI trademarks. FSC has a variety of ecolabels (marks), dependent upon the percentage of forest-based material in the stamped product.*

Literature Review III: A Gap in Forest Certification Research

In the 25 years since the inception of forest certification, there have been numerous studies examining the outcomes, efficacy, and motivations for seeking certification. Many of these studies have been international in nature and find that results vary by geographic region, governing bodies, and social elements (Gilani et al., 2018; Bowler et al., 2017). Gilani et al. (2017) used surveys to examine the motivations for forest product chain-of-custody (CoC) certification in British Columbia. Because CoC certification relies on wood supplied from certified forest managers, Gilani et al (2017) found that the available wood supply was a primary key barrier to adoption of CoC certification, indicating a lack of certified forest management organizations (Gilani et al. 2017). Tikina et al. (2005) used surveys and statistical analysis to investigate the motivations of industrial forest managers in the U.S. Pacific Northwest to obtain certification. They found significant positive correlations between certification uptake and market pressure (Tikina et al., 2005).

Some authors (Hălălişan et al., 2018; Rickenbach and Overdevest, 2006; Hayward and Vertinsky, 1999) found that private and public ownerships exhibit differing motivations for forest certification: economic motivations were higher for private-industry, whereas signaling

and continued professional development were greater incentives for public agencies such as DNR. Very few, if any, studies have been specifically focused on Washington state and/or have examined publicly owned and managed lands. This exposed a gap in studies of motivations for adoption of forest management certification. Hence, this work examines the motivations and barriers to forest certification of publicly-owned land in Washington state.

Thesis Questions

In Washington, approximately 2.4 million acres of land are owned by the state and managed by the Washington State Department of Natural Resources (DNR). All DNR forest trust lands (2.4 million acres) are certified to the SFI Standard, with approximately 8% of those lands (about 176,000 acres) dual-certified to both the SFI and the FSC Standards (DNR-Cert, n.d.). Upon learning this, I began to explore why there is a difference in uptake of the two standards. DNR's forest certification webpage implies the agency is amenable to expanding FSC coverage: "*DNR is working with FSC to generate more direct benefit to trust beneficiaries from FSC certification which could justify expansion of the program to more forested state trust lands"* (DNR-Cert, n.d.).

Given my early impressions that (a) FSC is the certification program preferred by environmentally-focused groups and (b) that DNR was interested in expanding FSC coverage, this thesis seeks to understand why SFI is the dominant certification program at DNR, and what would be required to more readily enable FSC coverage if DNR so chooses.

In particular, this work addresses the following questions:

Motivations for Certification

1) What factors influence DNR personnel's preferences for forest certification?
2) If certification is desired, which (SFI or FSC) is preferred? Why?

3) Does certification help (or hinder) achievement of management goals?
4) How do certification standards generally compare to legislated requirements, and how does that impact certification decisions?

Barriers to Certification

5) What barriers to certification exist in various DNR upland regions? What creates those barriers?
6) What is needed to overcome barriers to a preferred certification?

Research Relevance

This research will collate voices of subject matter experts at DNR regarding elements of forest certification, increasing both intra-agency and external understanding of certification decisions. There is empirical evidence for general agency-wide acceptance of the importance for certification and agency personnel readily provide evidence of practices that enable continued certification.

In the coming years, DNR will continue to make decisions about whether to maintain the status quo of the statewide certification pattern, or instead expand (or reduce) the FSC dual-coverage. While there is a single Forest Certification Project Manager at DNR, this role is not the decision-making entity but rather the coordinating and executing body. Instead, multiple decision-makers collectively set policy. This work will contribute to the information necessary as DNR policymakers consider future forest certification decisions.

Washington State Forestlands — Ownership and Management

The total land area of Washington state is about 45 million acres, with approximately half the state forested. The largest single owner of those forested lands is the U.S. federal government (WFPA-Forestland, n.d.) (***Fig. 5***). Federally-owned forests are managed by several different

agencies, such as the U.S. Forest Service and Bureau of Land Management. Jointly, federal agencies own about 43% of Washington state forest lands. Another, 38% of Washington forests are privately owned, split between non-industrial landowners, and privately-owned industrial timber companies (e.g., Sierra Pacific Industries) and industrial timber-REITS (e.g., Weyerhauser) that specialize in harvesting and selling wood products. Roughly 12% of Washington forestlands are owned by the state, and managed primarily by the Department of Natural Resources (DNR) (WFPA-Forestland, n.d.).

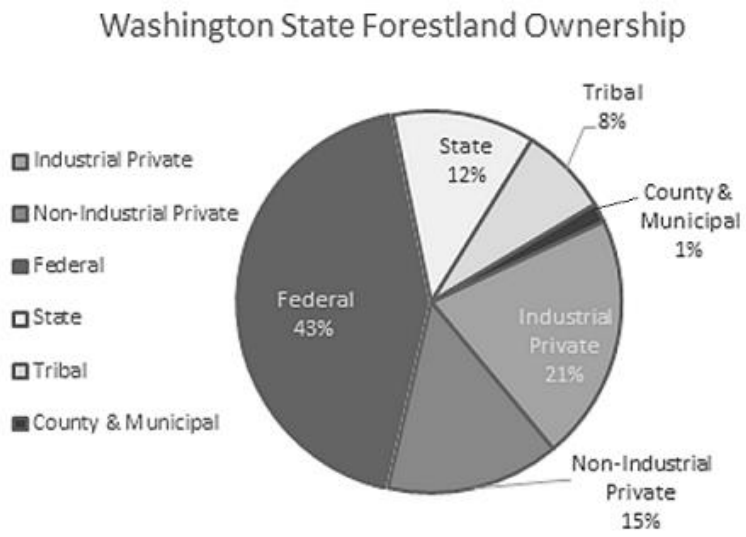

Figure 5: *Ownership of the 22 million acres of Washington state forestland. Data from the Washington Forest Protection Association (WFPA-Forestland, n.d.)*

DNR Forested Trust Lands

In 1957, the Washington state legislature created the Department of Natural Resources (DNR) to manage Washington state lands to be "*held in trust for all the people.*" Approximately 2.4 million acres of those lands are forests, natural area preserves, and natural resource conservation areas. In addition, DNR manages other properties such as aquatic lands. For clarity and accuracy in this document, all lands referred to herein as certified DNR-managed land, public forests, trust

lands, or other similar terms, refer specifically to state-owned, DNR-managed, forested trust lands in Washington state while excluding both certified and non-certified aquatic and natural areas.

DNR generates revenue through long-term timber production and is mandated to preserve forests, water, and habitat to "*meet the needs of present and future generations*" (DNR-About, n.d.) There are eight general trusts for which DNR is responsible to fund, including K-12 schools, state universities, and county services (***Fig. 6***). Timber harvesting and other activities such as leases for cell towers or renewable energy currently generate over $200 million annually for those trusts (DNR-About, n.d.). Forest certification is one tool used by DNR to signal sustainable environmental practices, as required of their role as trustee to meet the needs of present and future generations.

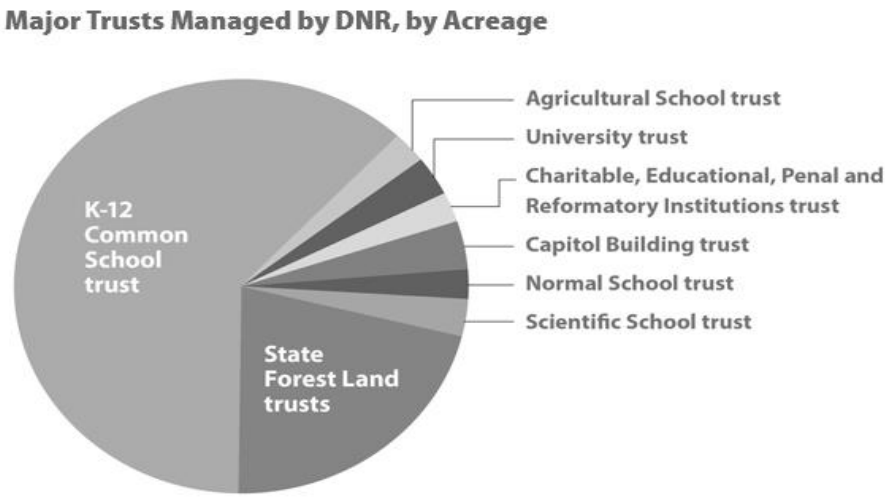

Figure 6: *Trust beneficiaries of DNR-managed state forest trust lands (DNR-Bene, n.d.)*

Thesis Study Region

Regional Legislation and Policies

DNR has divided the state of Washington into 6 upland region headquarters (***Fig. 7***), with 6 regional managers who are responsible for making decisions on how to implement agency programs as directed by their division managers and deputy supervisors. Throughout the state,

there is a suite of environmental protections in place. Under federal regulation, forests and resources are protected by laws such as the Endangered Species Act (ESA) and Clean Water Act. Activities on forestlands, such as logging, are also regulated by state laws such as the State Environmental Protection Act (SEPA). In addition, management activities in all 6 regions must follow DNR policies such as the 2020 Forest Action Plan (DNR-FAP, 2020), the Policy for Sustainable Forests (DNR-PSF, 2006), and the Forest Practice Rules (Title 222 WAC), which outline a suite of environmental protections such as riparian buffers to protect waterways, and rules for logging road construction to minimize erosion and runoff.

Figure 7: *Washington state DNR-managed forestlands are divided into 6 separate "upland regions," each with its own management team that addresses issues specific to the region (DNR-About).*

Furthermore, management activities in some areas (called Planning Units) are required to follow detailed specifications outlined in a Habitat Conservation Plan (HCP) wherever threatened or endangered species have potential to occur. Federal laws require such a plan under the ESA, and DNRs state trust lands HCP is in place to protect habitat for both plants and animals such as the northern spotted owl, salmon, bighorn sheep, Canada lynx, a variety of salamanders, golden paintbrush, and dozens of other species. Both SFI and FSC certification

standards require compliance with the suite of federal and state laws, plus relevant HCPs and similar land plans. Relevant to the motivation for certification decisions, all of the dual-certified regions are home to species of concern (rare, threatened, and/or endangered) and therefore have an HCP which protects them (***Fig. 8***). All FSC-certified forests are located within the SPS region, specifically within DNR's South Puget Habitat Conservation Plan Planning Unit, located mostly in portions of King, Pierce, and Thurston counties.

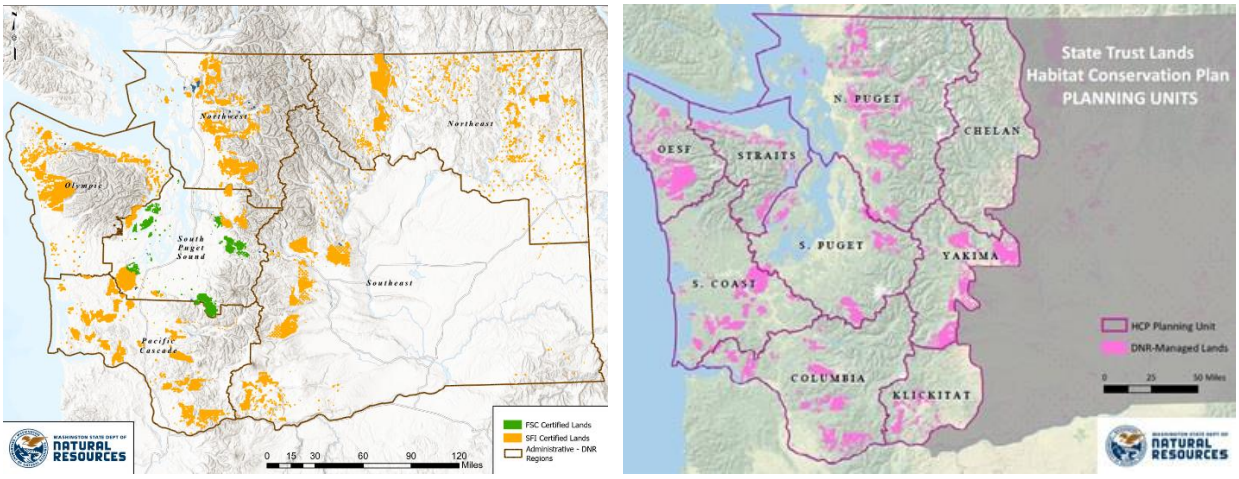

Figure 8: Washington state DNR-managed forestlands certified to SFI and dual certified to SFI and FSC. The figure on left shows SFI certified (orange) and dual-certified to both SFI and FSC (green) land in the 6 upland regions. The figure on the right shows the 9 HCP Planning Units, 8 of which do not have dual-certification but do have an HCP. All dual-certified land is located within the South Puget Planning Unit.

Regional Differences

Each of the 6 upland regions has physical and social characteristics that make it slightly distinct from the others, with 6 different regional managers and teams overseeing and carrying out the management activities. Differences among these regions include, but are not limited to:

- management (e.g., four of the regions are further split into 9 planning units based on large watersheds and managed under an HCP),

- certification (i.e., only the South Puget Sound (SPS) region has sub-regions that are "dual-certified" to both SFI and FSC),
- fauna (e.g., northern spotted owls are predominantly found west of the Cascades),
- flora (e.g., Ponderosa and lodgepole pine dominate in the hot, dry Northeast and Southeast upland regions, whereas western red cedar and Douglas fir dominate in the four cool, moist regions west of the Cascades),
- stakeholders (e.g., geographic distribution of tribal nations, political composition of residents),
- watersheds and other geologic features,
- social elements (e.g., rural and timber-dependent, or metropolitan communities).

The similarities and differences between the 6 regions provide a breadth of factors that influence how forest managers determine preferences for certification.

Chapter 2: Literature Review IV: Forest Certification Standards

Themes Identified through Certification Research

The primary focus of this chapter is to explore previous research on forest certifications, including public opinion of SFI and FSC, and what benefits or drawbacks have been found over the past few decades since the inception of forest certifications.

Five themes pertinent to this work are manifest from previous research:

- there is general public opinion that FSC is "environmentally friendly" and SFI is "industry friendly" (Garzon et al., 2020; Moore et al., 2012; Overdevest, 2009),
- that either certification is better than none, as measured by the health of forests and associated watersheds, particularly in regions where certification requirements exceed regulatory protections (Garzon et al., 2020; Moore et al., 2012; Azevedo et al., 2005),
- forest managers believe certification improves 'signaling' of healthy forest practices (Sample et al., 2003; Cashore et al., 2004)
- that forest managers appreciate the continued professional development required by certification programs and welcome the learning that occurs associated with certification (Garzon, 2020; Cashore et al., 2004; Sample et al., 2003), and
- economic gains of certification are either too difficult to measure, negligible, or instead find that certification incurs a financial cost (Espinoza et al, 2012; Harris, 2007; Forsyth, 1999; Haener and Luckert, 1998).

Structural factors that influence whether forest managers decide to adopt forest certification are public policy (e.g., regulatory and legislative mandates), economics (i.e., dependence on foreign and/or local markets), localized public pressure (i.e., politics), ownership of forestlands (i.e., federal, state, public, private), and social elements (e.g., fair labor

considerations) (Lombardo et al, 2021; Hălălişan et al., 2019; Tikina et al., 2008; Cashore et al., 2004; Cashore et al., 2001).

Findings from these studies include:

- Governments that regulate forest management activities to mitigate risk to threatened and endangered species correlate to an increase in certification adoption (Tikina et al, 2008; Cashore et al., 2001).
- Market dependency does not influence which certification program is chosen. While several studies hypothesized that forestland owners and managers that export to foreign markets would have greater certification uptake but these findings have not been significant (Tikina et al., 2008; Cashore et al., 2005; Cashore et al., 2001).
- Large institutions attract greater public attention, are more prone to experience political pressure, and often have greater uptake of certification (Cashore et al, 2005; Cashore et al., 2001).

Comparison of Forest Certification Programs

There are over 50 forest certification programs around the world, most of which (including SFI but not including FSC) are regulated under an umbrella organization called the Programme for the Endorsement of Forest Certification (PEFC) (***Fig. 9***). While the global wood and fiber marketplace supports a variety of standards that appeal to differing market niches, only three forest certification programs are recognized by U.S. regulatory bodies:

- the Sustainable Forestry Initiative (SFI) (under PEFC), and
- the American Tree Farm System (ATFS) (under PEFC), and
- the Forest Stewardship Council (FSC-US) (under FSC International).

The American Tree Farm System is specific to tree farms (e.g., holiday tree or garden store suppliers) and is not available on public forest trust lands. Therefore, it will not be considered in this work.

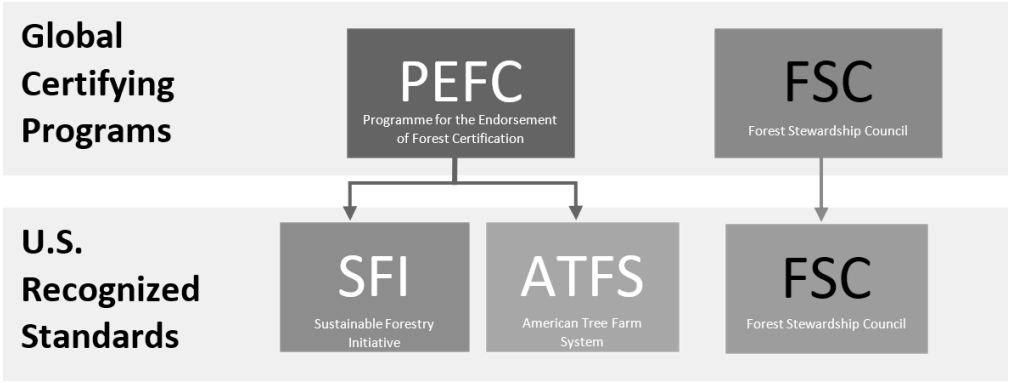

Figure 9: Global certifying organizations and U.S. recognized certifications. DNR-managed public forest trust lands can be certified under FSC and/or SFI, but not ATFS.

Worldwide, FSC and SFI are the two dominant forest certification programs. FSC is usually viewed by environmentally-focused groups as having more rigorous environmental and social standards than SFI (Schepers, 2010; Cashore et al., 2005), and would be expected therefore to compel a greater market-based incentive (Cashore et al., 2005). And yet, both the global and U.S. adoption of FSC remains lower than SFI (Auld et al. 2008). As of December 2022 in the U.S., there were 90 FSC Forest Management Certificates (FSC-Connect, n.d.). Concurrently, there were more than 3 times as many (284) SFI Forest Management Certificates (SFI Database, n.d.).

Forest Stewardship Council (FSC) Certification

FSC was created in 1993 by a multi-national coalition of nongovernmental stakeholders (Cashore et al., 2004; Sample et al., 2003; FSC-Who, n.d.), to "promote responsible forest management" (FSC-Who, n.d.) with the stated early objective of supporting "*environmentally appropriate, socially beneficial, and economically viable forest management*" (Dicus and

Delfino, 2003, p. 14). FSC-US is the national branch of FSC and the associated board of directors is responsible for adapting FSC-International principles (and associated metrics) to nine regional divisions (Fig. 10) (Gale, 2007; Washburn et al., 2003; Dicus and Delfino, 2003). FSC-US board members develop policies and guidelines that consider biogeographic distinctions between forest ecosystems in the U.S. (Washburn et al., 2003; CRS Report, 2011; FSC-US-Regions, 2011). Regional standards are not recognized until they are successfully endorsed by FSC-International (Dicus and Delfino, 2003). This does not directly impact Washington DNR because all lands managed under their authority are located in a single FSC-US-designated region. It does, however, impact large private industry groups who would have to certify to different FSC Standards when they operate in multiple regions, such as Idaho and Washington (Washburn et al., 2003). That reduces the overall number of companies willing to pursue FSC certification, which in turn results in fewer FSC certified operators and mills (Washburn et al., 2003). And that indirectly affects DNR because it potentially "breaks" the chain of custody without an FSC certified mill, and erodes the dominance of FSC as a local industry standard practice.

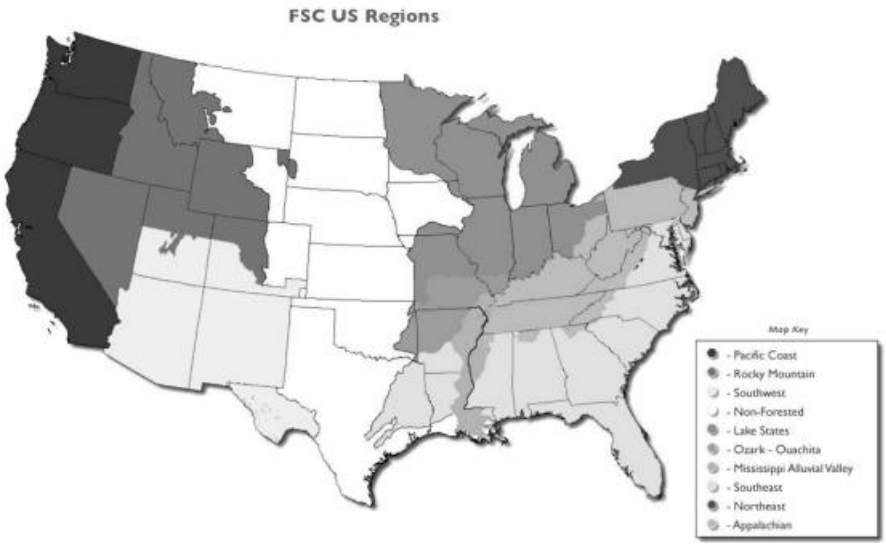

Figure 8: *The nine FSC-US regions (FSC-US-Regions, 2011).*

One environmental principle of the FSC Standard which is particularly relevant to this work states that "*Management activities in High Conservation Value (HCV) forests shall maintain or enhance the attributes which define such forests. Decisions regarding HCV forests shall always be considered in the context of a precautionary approach*" (FSC-Standard, 2022, Principle 9) As such, forest managers of FSC-certified lands must have detailed plans to identify, map and preserve HCV parcels. These plans must include provisions to retain habitat for regional endangered species (FSC-Standard, 2022). In Washington state, DNR meets this requirement on FSC-certified lands through their State Trust Lands Habitat Conservation Plan (DNR-HCP, 1997). An HCP is a plan in accordance with the Endangered Species Act to protect endangered and threatened plants and animals. It allows "incidental takes" (accidental harm or death of an individual plant or animal) within limits set by the federal government (Rahn et al., 2006; Wilhere, G., 2002). The intent of DNR's state trust lands HCP is to "*offset any harm caused to an individual listed with a plan that promotes conservation of the species as a whole*" (DNR-HCP, 1997, p. 1). The existence of an HCP or similar plan is beneficial in achieving FSC certification because the documentation FSC requires to protect biological and ecological criteria is well encapsulated in HCPs (Suzuki and Olson, 2008; FSC-Standard, 2022)

Sustainable Forestry Initiative (SFI) Certification

SFI and FSC initially had great differences in the foundational philosophical goals (Dicus and Delfino, 2003). One of SFI's early objectives was to maximize timber yield, and the early version of the standard did not seek public input but instead relied upon regulatory agencies to define forest management guidelines (Dicus and Delfino, 2003). These guidelines set the requirements for ecological elements such as riparian buffers or allowable sizes of clearcuts (Espinoza et al, 2012). Furthermore, SFI allowed genetically-modified organisms and prudent

chemical use whereas FSC initially did not (Rametsteiner and Simula, 2003). And, until 2007, SFI's financial records (including payroll, and bookkeeping) were managed in-house by the American Forest & Paper Association (AF&PA), the industry trade group that developed the SFI Standard (MacDonald, 2009).

The combination of industry origination, lack of financial transparency, emphasis on timber yield, and use of herbicides have resulted in environmentally-minded groups branding SFI as "industry friendly" (Garzon et al., 2020; Moore et al., 2012; Overdevest, 2009). Timber industry professionals also consider SFI to be "industry friendly," but for differing reasons: they often express appreciation for the certification and training support provided by SFI (Garzon et al., 2020; Overdevest, 2009; Sample et al., 2003). For instance, the SFI Standard requires collaboration within SFI Implementation Committees (SICs), which are groups of forest landowners and managers that work together to streamline certification processes (Moore et al., 2012; Haworth et al., 2007; Wallinger, R., 2003). SICs receive funding from SFI for activities such as developing logger and forester training, and for outreach and education programs (Haworth et al., 2007; SFI-SIC, n.d.).

Comparison of FSC with SFI

For those first few decades of forest certification, the general public impression was that FSC set a higher benchmark for environmental considerations, while SFI placed greater focus on training and worker safety (Garzon et al., 2020; Overdevest, 2009). A 2003 survey of land managers reporting on simultaneous dual certification to both SFI and FSC found that FSC was "*more thorough in its coverage of biological, ecological, and social issues*," and that SFI was "*more rigorous in their expectations for continuous improvement*" (Sample et al., 2003). One ecological difference between the two programs is that SFI had (and still has) a requirement that

clearcutting be limited to 120-acre units while FSC has varying clearcut allowances which are regionally dependent (Espinoza et al., 2012). Other differences between SFI and FSC include the details in rules for old-growth conservation, differing language around protection of Indigenous People's rights, and restrictions on use of genetically modified organisms (Espinoza et al., 2012). These distinctions have led environmental groups to preferentially align with FSC over SFI (Espinoza et al., 2012).

Furthering the early impression that FSC was more environmentally focused than SFI was a show of support from the Leadership in Energy and Environmental Design (LEED). Developed in 2000 by the U.S. Green Building Council, LEED was the first green building rating system, and is now predominant worldwide (USGBC-LEED, n.d). For well over a decade, LEED only granted "green building rating points" if forest products were sourced from FSC-certified wood. During that time, SFI and other forest certification programs campaigned to have their label recognized by LEED or, alternatively, to promote competing green building certification programs (McDonald, C. (2009). Under pressure, LEED drafted an Alternative Compliance Path in 2016 which recognizes additional forest product certifications, including SFI (Jacobs, 2019; USGBC-ACP, n.d.).

More recently, Garzon et al. (2020) completed a comparative analysis of FSC, SFI, and three other globally-recognized forest certifications. They found that "*FSC is much more detailed and prescriptive in nearly all aspects considered for forest certification. In particular, we find that most of the elements considered in the FSC Principle 6 (Environmental Impact) are either only superficial, or not addressed at all, in the other four programs*" (Garzon et al., 2020, Abstract). As partial evidence, Garzon et al. write, "*The FSC program has more specific requirements for rare, threatened or endangered species, whereas the SFI program requires awareness of rare*

forested natural communities and the development of a program to protect such species. Thus, the prescriptiveness of this SFI objective is low (no specific thresholds), and instead the procedural approach of this standard is evident. Similarly, language regarding the protection of old-growth forests is more specific in the FSC program, whereas the SFI program does not include the concepts of maintaining, restoring or enhancing natural processes, as described in the FSC program" (Garzon et al., 2020, p. 10).

However, FSC has had its share of detractors and bad press. Counsell and Lorass (2002) undertook six case studies of FSC certified lands around the world. They found that some certifying bodies (i.e., auditing organizations) had direct economic ties to the forests they reviewed and therefore had a vested interest in granting certificates (Counsell and Lorass, 2002). Other studies and public press similarly reported significant issues with FSCs monitoring process (Wright and Carlton, 2007; Clark and Kozar, 2011) leading to loss of credibility (Clark and Kozar, 2011; Moog, 2014). Moog (2014) examined the efficacy of "multi-stakeholder initiatives" through an in-depth case study of FSC. They traced FSC's evolution over two decades and found that FSC has "*failed to transform commercial forestry practices or stem the tide of tropical deforestation*" (Moog, 2014, p. 483). Moog (2008) also reports that in 2008, several non-governmental organizations withdrew support of FSC, including Friends of the Earth, Robinwood, Greenpeace, and the Swedish Society for Nature Conservation. These groups issued a joint statement that "*problems with FSC are so severe that supporting FSC threatens [our]own organizations' credibility*" (Moog, 2014, p. 474).

However, both SFI and FSC continually modify their Standards, roughly every 5 years. The programs grow increasingly similar with each revision (Kadam et al., 2021; Overdevest, 2009). Dicus and Delfino (2003) found that "*many believe that the two have moved closer in spirit in*

recent years. One forester close to both systems went so far as to remark that the two are like 'choosing between Ford and Chevy'"(Dicus and Delfino, 2003, p. 15). Nonetheless, there remains a general impression in the public that FSC has always been, and continues to be, more prescriptive while SFI allows more flexibility in demonstrating compliance to their Standards (Garzon et al., 2020; Overdevest, 2009; CRS Report, 2011; Sample et al., 2003).

Principles of FSC and SFI

Both forest certification programs define their Standard under operating Principles. These are broken down into successively into detailed indicators which allow an assessment of compliance. SFI breaks Principles down into objectives, then Performance Measures, and finally Indicators of compliance. FSC breaks Principles down into Criteria and Indicators (***Fig. 9***). While they have different names, the concepts are equivalent.

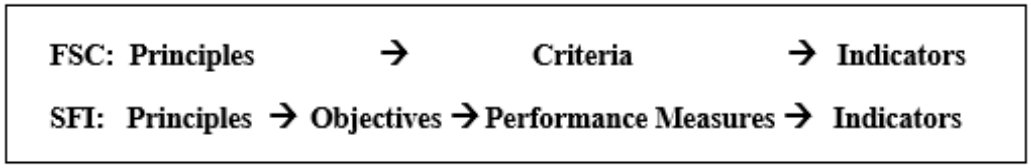

Figure 9: *Breakdown of SFI and FSC Principles to the indicator level.*

FSC has 10 operating principles, such as Compliance with Laws (#1), Environmental Values and Impact (#6), and High Conservation Values (#9) (FSC-Standard, 2022). Criteria are more detailed, such as:

> *"The Organization shall demonstrate that periodic monitoring is carried out to assess changes in the status of High Conservation Values, and shall adapt its management strategies to ensure their effective protection. The monitoring shall be proportionate to the scale, intensity and risk of management activities, and shall include engagement with affected stakeholders, interested stakeholders and experts."* (#9.4) (FSC-Standard, 2022).

Compliance to each criteria is measured through indicators such as:

> "*When monitoring results indicate increasing risk to a specific HCV attribute, the forest owner/manager re-evaluates the measures taken to maintain or enhance that attribute, and adjusts the management measures in an effort to reverse the trend. Where risks to HCV attributes are beyond the control of the forest owner/manager, (e.g., acid deposition, invasive species that are impractical to control), the rationale for lack of action to address those risks is documented.*"(#9.4.b) (FSC-Standard, 2022).

The structure of SFI is very similar. SFI has 13 total operating Principles, such as Legal Compliance (#8), Protection of Biological Diversity (#4), and Forest Productivity and Health (#2) (SFI-Standard, 2022). Objectives include details such as:

> "*Conservation of Biological Diversity: To maintain or advance the conservation of biological diversity at the stand- and landscape-level and across a diversity of forest and vegetation cover types and successional stages including the conservation of forest plants and animals, aquatic species, threatened and endangered species, Forests with Exceptional Conservation Value, old-growth forests and ecologically important sites*" (#4) (SFI-Standard, 2022).

SFI objectives are divided into Performance Measures such as:

> *"Certified Organizations shall manage to protect ecologically important sites in a manner that takes into account their unique qualities" (#4.3)* (SFI-Standard, 2022).

And compliance to SFI Performance Measures are assessed through Indicators, such as:

> "*Appropriate mapping, cataloging and management of identified ecologically important sites"* (#4.3.2) (SFI-Standard, 2022).

For comparison, the principles of FSC and SFI are grouped here under broad concepts of Legal Compliance, Management Practices, Environment, Social, and Growth/Improvement (***Table 1***).

Table 1: *FSC and SFI Principles grouped here under broad concepts. The principles (10 FSC and 13 SFI) are re-ordered for comparison. The leading numbers corresponds to the actual principle number as designated by the certifying organization.*

Broader Concept	**FSC Principle** (10 total)	**SFI Principle** (13 total)
Legal Compliance	1) **Compliance with Laws & FSC Principles**: Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.	8) **Legal Compliance**: To comply with applicable federal, provincial, state, and local forestry and related environmental laws, statutes, and regulations.
		12) **Transparency:** To broaden the understanding of forest certification to the SFI Standards by documenting certification audits and making the findings publicly available.
Management	7) **Management Plan**: A management plan — appropriate to the scale and intensity of the operations — shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.	1) **Sustainable Forestry:** To practice sustainable forestry to meet the needs of the present without compromising the ability of future generations to meet their own needs by practicing a land stewardship ethic that integrates reforestation and the managing, growing, nurturing and harvesting of trees for useful products and ecosystem services such as the conservation of soil, air and water quality, carbon, biological diversity, wildlife and aquatic habitats, recreation and aesthetics.
	8) **Monitoring & Assessment**: Monitoring shall be conducted (appropriate to the scale and intensity of forest management) to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.	7) **Responsible Fiber Sourcing Practices in N. America:** To use and promote among other forest landowners' sustainable forestry practices that are both scientifically credible and economically, environmentally and socially responsible.
Environment	6) **Environmental Impact**: Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.	2) **Forest Productivity & Health**: To provide for regeneration after harvest and maintain the productive capacity of the forest land base, and to protect and maintain long-term forest and soil productivity. In addition, to protect forests from economically or environmentally undesirable levels of wildfire, pests, diseases, invasive exotic plants and animals, and other damaging agents and thus maintain and improve long-term forest health and productivity.

	9) **Maintenance of High Conservation Value Forests**: Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.	3) **Protection of Water Resources**: To protect water bodies and riparian areas, and to conform with forestry best management practices to protect water quality.
	10) **Plantations**: Plantations shall be planned and managed in accordance with Principles and Criteria 1-10. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.	4) **Protection of Biological Diversity**: To manage forests in ways that protect and promote biological diversity, including animal and plant species, wildlife habitats, and ecological or natural community types.
Social	2) **Tenure and Use Rights & Responsibilities**: Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally	6) **Protection of Special Sites**: To manage lands that are ecologically, geologically or culturally important in a manner that takes into account their unique qualities.
	3) **Indigenous Peoples' Rights**: The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources	11) **Community Involvement & Social Responsibility:** To broaden the practice of sustainable forestry on all lands through community involvement, socially responsible practices, and through recognition and respect of Indigenous Peoples' rights and traditional forest-related knowledge.
	4) **Community Relations and Workers' Rights**: Forest management operations shall maintain or enhance the long-term social and economic well- being of forest workers and local communities.	5) **Aesthetics & Recreation**: To manage the visual impacts of forest operations, and to provide recreational opportunities for the public.
	5) **Benefits from the Forest**: Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.	
Growth/ Improvement		9) **Research:** To support advances in sustainable forest management through forestry research, science and technology.
		10) **Training & Education:** To improve the practice of sustainable forestry through training and education programs.

		13) **Continual Improvement**: To continually improve the practice of forest management, and to monitor, measure and report performance in achieving the commitment to sustainable forestry.

Previous Research on Motivations for Certification

There have been dozens of studies exploring aspects of forest certification, such as impacts on forest health and benefits to the forest managers. Despite differences between SFI and FSC, studies indicate that both programs correlate with positive environmental impacts worldwide as compared to uncertified, logged forests (Garolami and Arts, 2018; Speir, 2007; Gullison, 2003; Thornber et al., 1999). This is particularly true in geographic regions with relatively less legislated environmental protections than are found in North America and Europe (Fagundes, et al., 2020; Blackman et al., 2018; Garolami and Arts, 2018; Overdevest, 2009).

Consistent findings from research find that the primary motivations for certification of forest products are improved 'signaling' of healthy forest management (Sample et al., 2003; Cashore et al., 2004), and the professional development during certification initiation, annual surveillance audits, and 5th-year recertification (Moore et al., 2012; Garzon et al., 2020; Sample et al., 2003; Steven et al., 1998). As early as 1998, Haener and Laeckert (1998) found that "*producers may voluntarily pursue certification if they believe that the benefits outweigh the costs*" and that "being green" leads to improved public relations and higher staff morale (Haener and Luckert, 1998, p. S86).

Tikina et al. (2008) examined the factors that influence forest certification decisions in Washington and Oregon. They found that market pressure, land ownership, and the abundance of water bodies were the primary factors driving a decision to seek certification. In particular, market pressure was confirmed to increase certification uptake for all ownership patters (i.e.,

public, private, industrial, non-industrial) (Tikina et al., 2008). They also found that landowners with abundant water bodies have an increase of certification. They suggest that the reason might be because "water protection requirements of both Washington and Oregon, as well as federal laws and regulations in these states, are very detailed and demanding" (Tikina et al, 2008, p. 245). As a result, there is a great impact on forest management because of these riparian regulations, and the land managers seek recognition of their efforts through certification (Tikina et al., 2008).

In the first decade after the inception of forest certification, there was a belief that marketing certified wood would increase revenue (Sample et al., 2003). However, consistent findings from research into the economic benefits indicate that financial gains are either too difficult to measure, negligible, or instead demonstrate that certification incurs a financial cost (Espinoza et al, 2012; Harris, 2007; Forsyth, 1999; Haener and Luckert, 1998). Initial and ongoing costs include time spent to understand program requirements, alteration of both working operations and documentation processes, and potential impacts to harvesting income (Haener and Luckert, 1998).

Despite weak or nonexistent market benefits, forestland managers generally report being satisfied with their certification decisions. Reasons commonly cited for their satisfaction include positive environmental signaling to the public (Overdevest and Rickenbach, 2006; Araujo et al. 2009), and the emphasis on training for forest workers (Overdevest and Rickenbach, 2006; Cashore et al., 2005, Araujo et al., 2009) .

Chapter 3. Methodology

A qualitative, mixed method approach was used for this study:

- First, semi-structured, purposive interviews were held to collect information about DNR employees perceptions about advantages and disadvantages of forest certification.

- Next, grounded theory was used to analyze the qualitative data from the interviews. Open, axial, and selective coding enabled content analysis, and theoretical constructs of the motivations and barriers to certification.

- Third, during two weeks of field observations, I observed and took notes during forest certification audits, including the annual SFI surveillance audit and the 5-year FSC recertification audit of DNR-managed state forest trust lands.

Multiple studies indicate that using a variety of inputs which point to the same conclusions (e.g., interviews, surveys, empirical observation) increases reliability of study results (Bhattacherjee, 2012; Teddlie and Yu, 2007, Taylor-Powell and Renner, 2003).

Grounded Theory

In grounded theory, emerging theories are based upon data, in contrast to the traditional scientific method where one typically begins with a hypothesis and then tests to determine whether or not data supports the initial premise (Corbin and Strauss, 1990). Grounded theory is appropriate for exploratory research where the researcher wants to allow space for new concepts and avoid having preconceived theories determine the outcome of the research. Beginning grounded theory without a preconceived notion can minimize bias and lead to openness in the findings (Charmaz, 2014; Lewis-Beck et al., 2004). This methodology allows

the researcher to construct theories through coding and subsequent re-evaluation of codes into themes (Lewis-Beck et al., 2004; Strauss and Corbin, 1994); the theories are 'grounded' in the data (Charmaz, 2014). Interviews and surveys have been found to be well-suited as input to grounded-theory methods (Charmaz, 2014; Lewis-Beck et al., 2004).

Grounded theory generally begins with the researcher deriving a set of generative questions about the research topic and collecting information through interviews, surveys, or observation (RWJF, n.d.; Strauss and Corbin,1994). Coding is frequently used to categorize data from these types of sources and "*is one way to construct linkages between data…coding has a historical relationship with grounded theory*" (Simmon, 2017, p. 80).

In the first sampling iteration, the researcher reads through the data, assigning blocks of text to either preset or emergent codes (open coding), identifies themes and links the codes to these themes (axial coding), and begins to develop an initial hypothesis or theory (Chun Tie et al., 2019; RWJF, n.d.; Taylor-Powell and Renner, 2003). Open and axial coding continue simultaneously until enough themes have been identified to capture all nuances in the data, and no new codes or themes are needed to permit clear interpretation of the data (Simmon, 2017; Taylor-Powell and Renner, 2003).

The researcher then analyzes the coded findings to identify data and identifies gaps and new questions. As needed, interview or survey questions are revised, and then another round of data collection begins. Grounded theory, sometimes called the Constant Comparative Method (RWJF, n.d.), is founded on a practice of repeated comparative analysis. The analysis at each stage includes coding, categorizing, and comparing to earlier iterations (RWJF, n.d.; Chun Tie et al., 2019). The process continues until "saturation" is reached; the point at which no new insights emerge (RWJF, n.d.; Chun Tie et al., 2019; Patton, 2002; Miles and Huberman, 1994).

Finally, the researcher identifies one or two central categories which connect all themes and codes, and which encapsulate the essence of the data. These few representative categories form the unifying theme of the research and are used for a final round of selective coding. This last round of coding is the culmination of the process of grounded theory, allowing the researcher to state a theory supported by the research data.

In this work, I began with semi-structured, purposive interviews of six DNR personnel in various roles and regions. The remainder of this work followed the traditional Grounded Theory method as described and shown above.

One advantage of using grounded theory is the ability to enrich questions as data is collected (Charmaz, 2014; Lewis-Beck et al., 2004). One disadvantage is the possibility that some important questions are not asked of initial respondents. Indeed, this occurred and it was deemed important to hold a follow-up interview one individual.

Employing grounded theory was similarly done by two Western Washington University graduates, Timpson (2009) and Doering (2021), who each completed a Master's degree on subjects related to Pacific Northwest landscapes.

Content Analysis

Many researchers of content analysis methodology have found interviews and surveys are well suited as data sources for grounded theory content analysis (Charmaz, 2014; Creswell, 2013; Lewis-Beck et al., 2004, Auerbach and Silverstein, 2003).

Creswell (2013) discusses grounded theory, relying on a structure suggested by Corbin and Strauss (1990) and interpretation methods suggested by Charmaz (2006). (page 84). Creswell states the major characteristics of grounded theory are that the researcher seeks to develop a theory about why a particular process or action occurs, the primary means of data collection is

interviewing, and that data analysis can be structured by selecting a single category (code) to be the focus of a theory, and use axial coding (additional categories) related to the primary code. Where those categories intersect (selective coding) allow the researcher to form a theoretical model.

Creswell notes that other researchers (e.g., Strauss and Corbin, 1994) take grounded theory farther by developing a "conditional matrix" which connects the theory to a larger community such as the region, nation, or globe. However, Creswell notes that "*grounded theorists seldom have the data, time, or resources to employ the conditional matrix*" (Creswell, 2013, p. 87) and therefore the theory developed at the end of the selective coding leads to the end of the study presented as a narrative, visual, or a series of propositions (Creswell, 2013; Creswell and Brown, 1992).

In the social sciences, Krippendorff (1980) found that content analysis is effective when used to extract qualitative data from open-ended questions (e.g., interviews). Historically, content analysis employs three typical indices:

- the frequency with which an idea occurs,
- the favorable versus unfavorable attributes of the idea, and
- the qualifications associated with an idea which indicates the intensity (or strength) of a belief/motivation.

Krippendorff cautions against using these as quantitative measures but instead as a guideline for thinking about insights into the research. With regards to analysis of interviews about forest certification motivations and barriers, it is helpful to keep in mind the second index. For instance, if a respondent is discussing the economics of certification, to pay attention to both the favorable (related income) and unfavorable (expenses) elements.

Interview Design

The Western Washington University Institutional Review Board (IRB) for human subjects research reviewed the interview design. An Exempt Category 2 Approval (#4721EX22) was granted on June 3, 2022. Appendix A includes the human subjects approval memorandum, survey instrument, and consent form.

In the first six interviews, a consistent set of questions were used to allow comparison of responses. Questions were open-ended and related to respondents' experience at DNR and how they feel that forest certification impacts the environment, policies, and social aspects of forest management. I allowed time and conversational space for them to naturally drift off question. This allowed me to learn more about certification, brought up topics that I might otherwise not have thought to address, and enriched the question-base for the second phase of grounded theory. The combination of using a standardized open-ended question set combined with informal conversation (Patton, 2002) is a method that allows focused and efficient respondent time, and facilitates comparison and analysis of responses while also offering "*maximum flexibility to pursue information in whatever direction appears to be appropriate*" (Patton, 2002, p. 342).

In the first round of interviews, the questions were:

- In your opinion, does certification help (or hinder) achievement of management goals (yield, income, other goals)?
- Do you think certification has led to any DNR forest management changes (policy, practice)?
- Do you feel that certification is more (or less) prescriptive than legislation with regard to environmental considerations?
- Do you feel that certification advances any protections for jobs or other stakeholders?

- What do you see as the differences between SFI and FSC, regarding: environment? Jobs? Other?
- Who (what role at DNR) makes the decision(s) about forest certification (i.e., whether to certify, which Standard, etc.)?
- Are there elements of forest certification that you **like**? Are these specific to your upland region or statewide?
- Are there elements of forest certification that you **dislike**? Are these specific to your region or statewide?
- If the decision was all yours, would you certify the lands you are working on? If so, which (SFI or FSC)? Why?
- Is there anything else you feel we should discuss regarding the motivations for DNR to choose certification, and/or any barriers to certification?

In keeping with the method of Grounded Theory, I coded this set of interviews before continuing with another set of interviews.

After the first 6 interviews were conducted and coded, it was apparent that more information was needed specifically with respect to FSC certification. Therefore, in the second set of 7 interviews, I added two new questions:

- If DNR was to drop FSC certification, what repercussions would you anticipate?
- What specifically about FSC makes certification difficult to obtain or maintain?

Purposive Sampling

I used purposive sampling to select a balance of attributes in the individuals that were interviewed. These attributes include:

- The role or expertise they provide to DNR.

- The geographic region in which they work.
- The level of direct engagement with certification and associated processes.
- And their tenure (length of time) working at DNR.

Each of these attributes are described in the results section, with an explanation of their importance and consideration of the desired percent balance of respondents in each division of the attributes.

To find interview candidates, I reviewed DNR public webpages and made a list of the 6 region managers and 6 "lead" foresters with the intent of asking each for an interview. At that time, I was unaware of the nuanced roles that "field" employees fill and believed that foresters would provide full context for the non-managerial participants in this study.

The first interview was hastily scheduled as soon as the IRB process was complete because one individual was retiring. They were an important voice to capture because they had been with DNR for many decades and been pivotal in the decision and implementation of the first certifications of DNR land. This individual explained the roles of silviculturists, biologists, geologists, and other subject matter experts who provide input to forest management and certification decisions. They suggested that I speak with a variety of "field" employees in addition to (or in substitution of) the foresters on my list. I then scouted the webpages for individuals in a variety of these roles throughout the state and reached out to them for interviews. Every individual I contacted enthusiastically agreed to an interview, leading to a 100% response rate.

Interview Venue

I initially intended to conduct all interviews in person. However, travel times would have been considerable throughout the state, and due to pandemic work practices, DNR employees are very comfortable with remote meetings. Therefore, most interviews were conducted over Microsoft TEAMS and transcribed using TEAMS real-time transcription software. I recorded both the audio and video of remotely-held interviews, reviewing the transcripts and correcting as needed using the videos for accuracy. Some words and phrases were consistently garbled by TEAMS transcription. For instance, "forest" was almost always transcribed as "for us," "herbicide use" often became "herbicide views," and "forest practices" was interpreted as "forged practices." These and other small errors needed correction. In some cases, the transcription was confusing. In these instances, I used the videos to replace garbled or missing information. Four interviews were held in-person using a handheld recording device. These were manually transcribed later.

Coding Methods

In the social sciences, coding is a process whereby data from interviews or surveys are categorized. This organizes the data in a manner that facilitates analysis. According to Krippendorff, (1980), coding was invented historically in the field of journalism to allow both qualitative and quantitative assessment of interviews.

All interviews were coded with Quirkos software, using 3 common levels of coding (RWJF, n.d., Simmon, 2017). These stages are:

1) Open coding: the initial stage of breaking the data into granular codes, such as SFI, FSC, owls, roads, politics, or laws.

2) Axial coding: organizing codes into categories and constructing linkages. For instance, community-support, environmentalism, and politics were all linked into a theme of Public/Media. In some cases, it was necessary to de-link and remove some codes. For instance, "sustainable" was frequently used in reference to DNR's "sustainable forest practices rules" but speakers interpreted this in multiple unrelated themes such as economics, ecology, and workload. In this case, it was necessary to remove the code and instead assign those sections of text more appropriately to the intended theme.
3) Selective coding: the final stage of coding, in which two overarching themes (motivations and barriers) were chosen. All other themes and codes were associated with these selected categories.

The first set of 6 interviews generated approximately 55 unique codes. Several themes quickly emerged. The codes were grouped into 27 themes, including Certification, Public/Media, Harvesting, Environmental Impacts, Legal/Regulatory, Economics, Motivations, and Barriers/Not Barriers. These themes were then used for axial coding. Occasionally, new codes would arise and be added as a new code, either as a stand-alone code or added to an axial theme as appropriate.

Each interview was coded and reviewed two to five times. The first pass was used to generate new codes (open coding) and/or associate blocks of text with already determined codes (axial coding). In a few cases, I revised the open codes which necessitated partially re-coding some interviews. For instance, I initially had a code called "Barriers" but broke this into two codes, "Barriers" and "Not Barriers" because many respondents commented on issues that they

felt were *not* barriers despite having had initial concerns that the particular element would have been an impediment.

Successive passes through all interviews were necessary because transcripts that were coded first had blocks of text that also fit with emergent codes and revised themes. Finally, selective coding was used to delegate all other themes and codes into the 2 central categories of Motivations/Not Motivation and Barriers/Not Barriers.

Field Observations

I spent 4 days observing the SFI annual surveillance audit and a second week observing and assisting with the 5-year FSC recertification. The SFI annual audit was held in the SE and NE upland regions of Washington state. Over the first several days, I joined two auditors and DNR personnel as we toured timber sale locations, recreation sites, engineering projects (e.g., fish culvert replacements, forest roads with bridge installations), lease sites (i.e., cell towers on DNR-managed land), forests recovering from wildfire, and locations where private citizens have encroached on public land with fencing, wells, and gardens. Throughout the field visits, the auditors interviewed forest workers (for instance, loggers, engineers, biologists). We also spent one day in-office during which both auditors reviewed documentation, asked questions and requested supporting evidence of particular indicators, and conducted interviews of other staff (for instance, geologists, and product [timber] sales personnel).

The FSC recertification audit was held in the South Puget Sound (SPS) upland region. This recertification took 5 days. The original plan was to include 3 days of field tours and two days in-office, with activities very similar in scope to those of the SFI audit. The scheduled week of the tour, however, severe weather and snow made it impossible to access the high-elevation sites. This provided an opportunity for me to observe both the legal requirements of certification audits

and the flexibility that is sometimes necessary to fulfill those obligations. With approval from FSC-US, the recertification progressed with 3 full days of intense document review and interviews, 1 full field day, plus review of drone footage recently filmed at the higher-elevation sites. All scheduled sites not visited in person were put on the schedule for the first annual audit which will take place in 2023.

Prior to and during both the SFI audit and the FSC recertification, I was able to review evidence for each indicator independently and listen to the auditors as they asked questions during the field and in-office reviews.

During the audit weeks, I was primarily an observer and refrained from asking questions due to the sensitive nature of the audit process. However, in the evenings and during long transits, I was free to informally converse with the auditors about general audit processes in the United States and Canada, and to discuss the differing motivations and barriers for small- and large-acreage owners, and between public- and private-forest managers (i.e., DNR versus private industry like Weyerhauser or Sierra Pacific). I was also able to talk with DNR employees and non-agency specialists such as bridge engineers, geologists, biologists, and loggers about general changes they have seen over the past 30 years. Some of those individuals shared information about cultural changes in the logging industry as a whole, some shared details about how new scientific knowledge is incorporated into management decisions (e.g., how new information about the necessary range of Northern Spotted Owl or dietary habits of Canadian lynx would inform management practices), and some explained implementation of new technologies that improve ecological outcomes (e.g., bridge structures, culvert design, and road building).

While none of this information is included directly in the coding and analysis process, the ability to witness the process grounded my personal understanding of forest certification, and enriched this study.

Chapter 4. Results and Analysis

Respondent Demographics

Interviews

In total, I held interviews with 12 people. Eight interviews were of a single participant, two interviews were held with two people at a time, and one interview was a follow-up with an initial respondent. This resulted in a total of 11 interviews between June – November 2022. All interviews were 60-70 minutes long, with the exception of the follow-up interview which lasted approximately 20 minutes. I used purposive sampling to select a balance of attributes in the individuals that were interviewed. These attributes include:

1) The role or subject matter expertise they provide to DNR.
2) The geographic region in which they work.
3) Their level of experience with certification administration and associated processes.
4) Their tenure (length of time) at DNR.

In the first two attributes (role/expertise and geographic region), some individuals fit multiple divisions of the category. For instance, one individuals worked initially in the field and is now in a managerial role, and two respondents have worked in 2 or more regions. Therefore, the total number of respondents included in each of those two attributes appears to exceed 12 individuals, but that is explained by the duality of categorization.

Role/Expertise

I was anticipating possible response differences between those who work "in the field" versus those who work in managerial capacities, and strove for roughly a 50%-50% balance between these two broad divisions. Roles and expertise such as forester, silviculturist, biologist,

and soil chemists were included in the "field" group. Roles such as certification lead, and division or regional manager were grouped in the "managerial" classification. I conjectured that "field" individuals would share empirical observations of how certification impacted the forest ecosystem and workload, whereas managerial personnel would focus on economics, policy drivers, and processes.

Among the twelve individuals interviewed, 5 serve in managerial roles at DNR and 7 respondents work or have worked in the field as a DNR-employed forester, silviculturist, scientist, or engineer (***Fig. 10***).

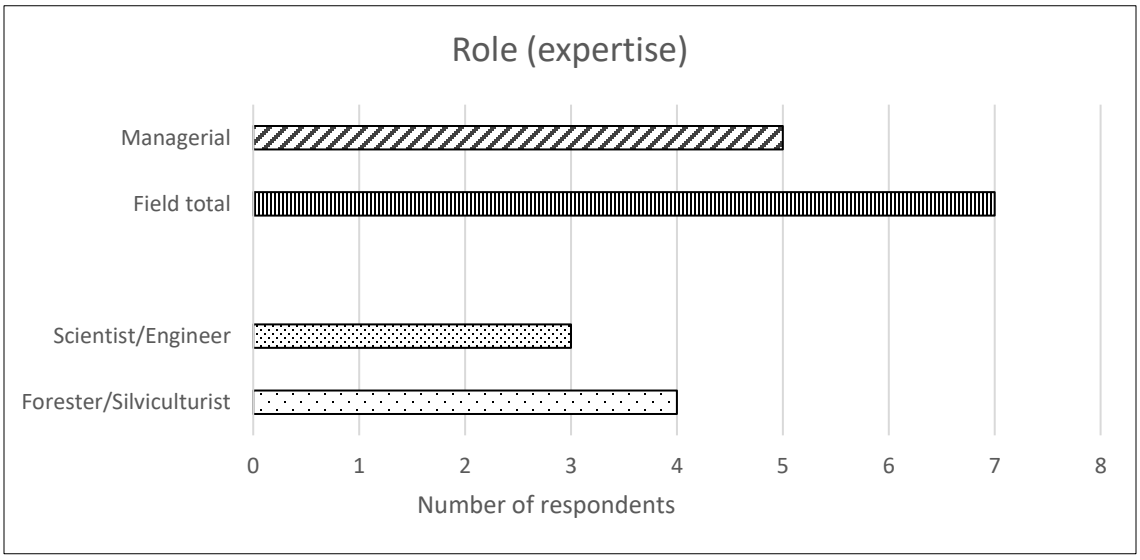

Figure 10: *Respondent field of expertise.*

Geographic Region

Because the upland forested trust lands are divided into six separately managed units (***Fig. 7***), I initially anticipated that I would interview one field and one managerial person from each of the six regions. However, people at DNR occasionally move between regions, and many managerial positions are statewide. Therefore, I allowed that coverage from at least two people in each region could include the possibility that one of them was 'statewide.'

In 2 of the regions (NW, Pacific Cascade), there were 2 respondents that work, or have previously worked, in each of these management areas. In one region (NE), there were three respondents that work, or have previously worked, in this region. And in the remaining 3 regions (SE, SPS, Olympic), there was one respondent who currently works in each area. Four of the respondents have always worked in statewide roles (e.g., product sales, certification, management), and one respondent in this study has worked in the field and also in a statewide managerial role. (***Table 2***).

Table 2: *Number of respondents representing the "voice" of each region.*

Region	INT#	# in Region	Statewide	Total # 'voices'
NW	INT1, INT2	2	5	7
NE	INT1, INT8, INT9	3	5	8
SE	INT7	1	5	6
South Puget Sound	INT6, INT7	2	5	7
Pacific Cascade	INT11	1	5	6
Olympic	INT12	1	5	6
Statewide	INT3, INT4, INT5, INT10, INT 12	-	5	5

Individuals whose work is statewide had deep familiarity with the political, ecological, and social nuances in each region, as evidenced by concurrence with findings from individuals who worked in those regions. In addition, statewide personnel held broad information about overarching policies and historical knowledge that guides forest management practices in all regions.

In some cases, individuals working in a particular region were only vaguely aware of factors that might affect certification in other regions, yet they were all deeply familiar with how certification impacts their own area. This combination of respondents provided information that was both deep and broad, and presented thorough representation for each region.

Certification Support Experience

It is common practice for agencies or private industry to have at least one individual whose job it is to navigate the certification process. In this work, I was interested in whether personnel who have experience in that function differ in their opinions of certification than individuals who have no experience in that role. I sought roughly a 50%-50% balance between those who currently, or in the past, have experience with the process of initiating and/or maintaining forest certification. Respondents who answered yes had experience with coordinating or administering SFI and/or FSC Forest Management certification. Some of these individuals also have experience coordinating other types of forest certification, such as Chain-of-Command or ISO Forest Standards.

Of the 12 respondents, 5 had direct certification support experience (***Fig. 11***). The other 7 had no direct experience in the "behind-the-scenes" role, but all have participated in annual surveillance and/or recertification audits in their regions. Every respondent has served as subject matter experts during audits. For instance, in the field, an engineer will be present to explain how they built a particular bridge over a fish-bearing stream, answering questions the auditor might ask about steps they took to prevent debris-flow during installation or materials used in the bridge itself. Similarly, during the office-portion of the audit, these individuals are available for interviews on topics such as habitat development for endangered species such as the marbled murrelet or Canadian lynx.

The 5 respondents with experience in coordinating certification explained that their workload includes activities such as contracting with auditors, creating databases for evidence, planning field tours (including logistics such as transportation, lodging, and meals), facilitating in-office interviews and evidence review, working with required state- and regional- implementation committees, tracking certification numbers on wood products, writing Environmental and Social

Risk Assessment documents for herbicide applications, and overseeing proper and legal usage of the SFI or FSC trademarks.

One respondent has extensive experience with certification to both the SFI and FSC Forest Management Standards, for both publicly-owned land such as that managed by DNR and for private industry. This individual has rich experience in several states, with several industries, and also has a great deal of experience with ISO forest management standards and SFI and FSC chain of custody standards, and provided helpful background and contextual information.

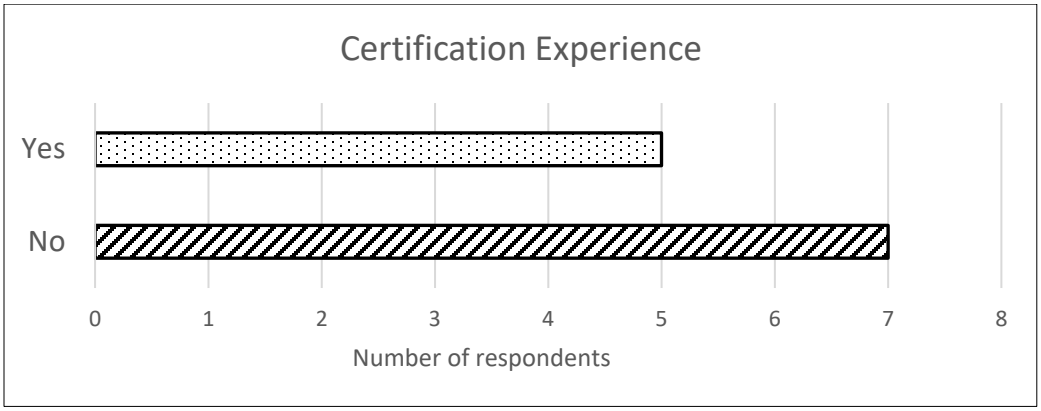

Figure 11: *Level of certification experience of respondents.*

Tenure (years working at DNR)

I wanted to capture potential differences between employees who have been with the agency through multiple recertification (5-year) cycles and those who had relatively less exposure to certification impacts. I also wanted to allow for possible distinctions between new or developing insights versus those with long-term understanding of agency culture. Furthermore, I wanted to hear from individuals who had been at the agency before DNR certified any forestlands and/or during the process of initial certification. I divided this attribute into those who had been with DNR either less than, or greater than, 10 years. I sought to have 65-75% of the interviews with these long-term employees, expecting richer experience and dialogue about DNR motivations and barriers of certification.

Of the 12 respondents, nearly all have been at DNR for over a decade (***Fig. 12***). Because I reached out specifically to individuals who might have influence on, or knowledge about, DNR's decision-making regarding forest certification, all of these individuals have decades of experience in their profession in order to reach their level of expertise. While some people occasionally move from one region to another, most of these individuals started at DNR several decades ago. Two of the respondents have been with DNR for less than 10 years but both have been in the workforce for longer than 10 years. One had rich experience with SFI and FSC certification outside of DNR and the other had none.

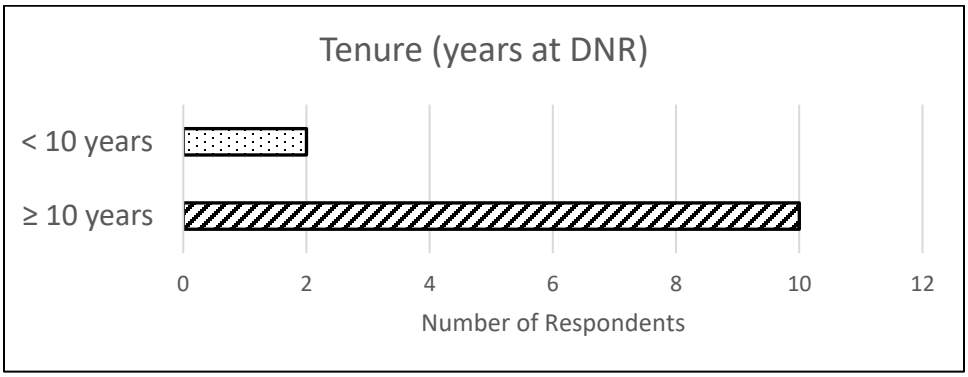

Figure 12: *Respondent tenure (years working at DNR).*

Coding Results

Coding the first three interviews initially generated approximately 60 codes but many of these were "orphans" (using terminology of Auerbach and Silverstein, 2003) and were not repeated by the respondent or by others. For instance, the name of a particular environmental organization in Washington was deemed potentially important when first mentioned and was given its own code, but that organization was never mentioned again by any respondents. After the first three interviews, orphan-codes were temporarily cached in case they arose again. At the end of the first set of 6 interviews, orphan codes were deleted. The net result was that this set of interviews generated 31 unique codes with 525 associated "quotes" (also referred to herein as

"textblocks" or "phrases"). Themes began to emerge; the 31 codes were grouped into 11 themes, including Public/Media, Harvesting/Operations, Environmental Impacts, Legal/Regulatory, Economics, Motivations, and Barriers. The 11 themes and 31 codes were then used for open and axial coding of the second set of 7 interviews. While coding the second iteration, 4 new codes emerged but no new themes or insights. After all interviews had been fully coded (open and axial), there were 697 textblocks associated with 35 unique codes and 11 themes (***Table 3***).

Table 3: *Number of codes, themes, and quotes in each stage of coding.*

Grounded theory stage	# codes	# themes	# quotes	Description of change
Grounded theory set #1 (6 interviews)	37	11	525	-
Grounded theory set #2 (7 interviews), and review of set #1	41	11	697	4 new codes 0 new themes 172 NET total new quotes
Reviews: Theme and code linking and elimination (13 interviews)	30	7	673	11 codes eliminated 2 themes eliminated 2 themes linked under another 24 phrases removed
Selective Coding: Final theme determination and sorting (13 interviews)	30	3	673	Final themes: Motivations Barriers Future Preferences

During the second set of interviews, participants were encouraged to discuss any chosen interview topic as fully as they wished, with less guidance to address every thesis question. In the method of Patton (2002), allowing informal conversation facilitates analysis of responses because respondents naturally pursue the most relevant factors (Patton, 2002).

Worth noting is that in the second set of interviews, the number of textblocks assigned to codes did not double (despite slightly more than doubling the number of interviews, from 6 interviews to 7 interviews in the second set). This is largely because I coded the 7 interviews and also reviewed all 13 as part of the 2nd iteration of grounded theory, recoding more accurately

during the successive passes. As I became more familiar with the data, and more experienced with coding, I recognized that occasionally entire paragraphs should have only a single code. While initially coding the first 6 interviews, I used coding to "flag" key words as opposed to categorizing the larger idea the respondent was discussing. In that mindset, I had initially coded parts of paragraphs (e.g., a sentence, or important phrase) as separate codes. For instance, the following paragraph initially had multiple codes (e.g., FSC, audit, social, buffers, roads, environmentalists) but upon review, the entire paragraph was actually a single quote related to "public image."

> *" The German forestry industry was very upset because the Russians were FSC certified and followed none of the standards and somehow, they passed all their audits. They passed their audits because they were in a dictatorial state where you only got to go to the sites that the Russians pre-prepared for you and you didn't get to see anything else. Different culture, different countries, you know, different situations. So, the industry, specifically the German industry, complained specifically to FSC about these activities. They were saying, "The Russians are logging whole watersheds, there's no buffers, there's no road construction standards. There's immense amounts of damage." But... crickets, from FSC. Simply crickets. So, what finally changed that? Environmentalists started screaming. IKEA got nailed because an environmental group was screaming. So, they did an audit and they found out the Germans have been right from the git go. IKEA was using Russian oligarch timber to make IKEA products in Asian shops all over the world. Lumber Liquidators had a big situation as well, where they were actually paying their assessors an extra 10% premium to not acknowledge that they were harvesting timber from, like, the last homeland of the Siberian tiger or something. That kind of thing damages your credibility, you know. Even*

though the industry was complaining for years, nobody listened. But when the environmentalists complained, everybody dropped everything and investigated." (INT1).

Each interview was coded and reviewed well more than 5 times. The first pass of each interview was used to generate new codes (open coding) and/or associate blocks of text with themes (axial coding). Successive passes of open and axial coding of all interviews were necessary because transcripts that were coded first had blocks of text that also fit with emergent codes and revised themes.

In the review stages of coding, 11 more codes were eliminated, and two themes were nestled within other themes. Eliminated codes were: "trusts," "purchasers" "G&Y model," "capitol forest," "scale (landscape/harvest)," "thinning," "community forest," "recreation," "VRH," "ethics", and "mis-use of certification." While not orphans, these codes, plus 2 themes linked to them, were irrelevant to the thesis topic and had only 2-3 associated text blocks each. For instance, "ethics" was removed because there were only a two associated textblocks, both of which failed to fit tightly with the thesis topic. In one of them, the individual stated, "*I promised myself when I went to [university] that I would never compromise my ethics. If I couldn't support what we were doing – even if we were certified sustainable - I wasn't going to go along just to fight for my job*." (INT3). This statement was in reference to how certification can signal environmentally sound practices, but the content of the quote fails to provide robust support of either of the main themes of Motivations or Barriers.

Finally, selective coding was used to sort all themes and codes into 2 central categories of Motivations and Barriers (***Table 3***, above). A third theme was identified for comments respondents made about their personal "Future Preferences" for forest certification decisions at DNR.

Reflecting on the three indices of content analysis identified by Krippendorff (Krippendorff, 1980), it became apparent that all three (the frequency, the supportive or adverse attributes, and the qualifications associated with an idea) were readily identifiable in these interviews.

Important to this work, respondents emphatically discussed adverse attributes. For instance, under the theme of Motivations, most respondents commented on factors which they expected to be beneficial but were disappointed to find otherwise. In particular, early adopters of forest certification expected to benefit from increased revenue. Yet, every respondent that mentioned economics stated that certification provided no financial benefit, and therefore was *not* a motivator. Respondent comments include:

- " *You know how it was sold to us in the mid-2000s was that certification (SFI for us at that time) and third-party auditing, would allow higher prices for our product. I don't think that's actually been something we have seen*" (INT12)
- "*But the odd thing about all of certification in the entire time in my career: I've never received any more money for a certified log than I have for noncertified log. If we tried to leverage higher prices out of them [the purchasers], they just kind of go, sorry, we'll buy our logs somewhere else."* (INT5)
- "*Economically, I go back and forth on certification over the past 20 years. Is it worth however many dollars that we invest every single year buying into the program? Outwardly I would say probably not, but then inwardly I would also say that I don't think we can NOT be certified; it has more to do with aligning ourselves with industry standard. Those are just kind of my feelings on it."*(INT11)
- "*I will tell you that neither of the certifications has earned us a dollar*" (INT1).

Similarly, when discussing Barriers, many respondents commented on issues they identify as *not* creating a barrier. For instance, nearly every person commented they had initial concerns that

environmental metrics would be an impediment to certification, but instead were relieved to find that DNR was already exceeding those benchmarks. Respondents uniformly believe this outcome is because existing governmental regulation requires even greater environmental protection, especially in Washington state. Respondent comments include:

- *"If you follow the required forest practice standards, you gotta work hard to NOT be SFI or FSC certifiable... You know, it wasn't a very high hurdle for us to get over. We were already operating well above that and have continued to advance over the years."* (INT1)
- "*In Washington state, it [certification] doesn't really make a difference environmentally. The forest practice rules here are extraordinarily robust."* (INT5)
- "*Our laws are more protective of the environment than SFI or FSC. Even without an HCP in some places, we are still meeting the requirements of certification easily."* (INT7)
- "*DNR had already gone to 100-acre units before we got certified. And SFI wants you to be under 120. I know that 100-acre limitation was not driven by certification because we had that requirement before we were SFI certified."* (INT12)

Theoretical Constructs of Motivations and Barriers

Auerbach and Silverstein (2003) propose an analysis methodology in which ideas repeated by multiple respondents are used to identify an overarching concept. Multiple, related concepts enable the discovery of theoretical constructs. Using this method, theoretical constructs for 3 primary Motivations (***Table 4***) and 3 primary Barriers (***Table 5***) were realized. These are:

Motivations:

1) Public pressure is a "stick" – it looks bad to NOT be certified.
2) Government regulations and good internal workflow make it easy, so why not certify?
3) We want to feel good about what we do and we want acknowledgement of our work.

Barriers:

1) FSC-International is the major impediment to FSC certification.

2) FSC makes every step harder than it needs to be.

3) Certification to either SFI or FSC requires time and money – with no economic return.

MOTIVATIONS Analysis

Table 4: Motivations. *Theoretical constructs for motivations are based upon overarching ideas (alphabetized summations). The overarching ideas are supported by repeated comments by respondents (numbered statements). Some repeating ideas here are verbatim, but are summations of statements from multiple respondents.*

Motivation 1: Public pressure is a "stick" – it looks bad to NOT be certified.

A. *Environmental pressure on politicians influences which certification is pursued.*

1. The whole FSC thing in South Puget… that was done for political reasons.
2. We are the largest single landowner or manager in terms of acreage in the PNW that is FSC certified; frankly, that is because of the environmental pressure on us as a public agency.
3. There is less pressure in some regions to go to FSC.
4. The little pockets certified to FSC are in response to environmental activism. You gotta carry King County to be elected as a statewide official.
5. There's a difference in east vs. westside… They don't complain as much on the eastside.

B. *Keeping up with the Joneses: Certification is an industry standard.*

1. Certification is now an industry standard. It keeps us even with everyone else.
2. We would be an outlier compared to others in the industry in the PNW.
3. It's a social-political ability to say we are certified like everyone else, right?
4. The perception of DNR NOT being certified would be a large marketing deterrent.
5. Everyone in the PNW is pretty much certified to SFI.

Motivation 2: Government regulations and good internal workflow make it easy, so why not certify?

A. *Our laws/regulations are more stringent than the metrics in either certification.*

1. The Policy for Sustainable Forests and state environmental laws are more restrictive than certification requirements.
2. Federal rules on roads are prescriptive. Cert doesn't change anything about how we engineer the roads.
3. We were already ahead of the environmental and social practices even before cert was a thing.
4. Even without an HCP in some places, we still easily meet certification requirements.

B. *SFI is easy for us overall. Existing HCPs also make FSC easy in applicable regions.*

1. We already capture our processes for ourselves; we don't have to document uniquely for SFI.
2. Our internal systems and monitoring workflow is compliant to both standards.
3. Getting SFI in the early 2000s was not a high hurdle; we were already operating well above that and continue to evolve over the years.

4. Our state trust lands HCP is more robust than the Washington's Forest Practices rules and easily exceeds FSC metrics.
5. Our HCP and conservation strategies meet federal laws like the ESA. That makes FSC easy .

Motivation 3: We want to feel good about what we do we want acknowledgement of our work.

A. *It's an external set of eyes to keep us responsible and accountable.*

1. The reason we do it is because of public perception.
2. It's a good PR tool; don't just take our word for it - we are third party verified.
3. It shows that, yes, we follow the laws and Forest Practices rules.
4. It's a checking system; land managers have to think about healthy forest management.
5. It's a different lens for examining our own work and the outcomes; it makes us better.
6. It keeps people on their toes; somebody is looking over their shoulder.

B. *It's a tool to get policy & procedures re-examined (and prioritized) by admin.*

1. Certification makes us look at everything we do, every year.
2. It makes us stay on top of our documentation.
3. It makes us think about WHY we are doing things the way we do, and if we need to shift.
4. The audits are an opportunity to raise issues about practices we are not doing; if we get a nonconformance, management has one year to give us the resources to fix it.
5. Cert makes us carefully consider and explain any use of chemicals.
6. Cert helps make sure we are doing what we said we would do
7. Before the audit happens, we work hard to proactively identify and address any issues with our practices.
8. Cert reinforces and protects practices we do that are positive for the ecosystem.

C. *It feels good to be told we are doing a good job.*

1. It's kind of a pat on the back when you get a good clean audit.
2. Auditors look at spraying very carefully. It's a hot button. It's nice when they say, yeah, you're doing a good job here.
3. Standards continue to get more environmentally and socially responsible. When we meet increasing standards every year, we know we are staying ahead of the curve. That feels good.
4. It's satisfying to be told we are managing sustainably when we meet requirements.

Motivation-1

The dominant theoretical construct as to what motivates DNR to continue with forest management certification is that **Public pressure is a "stick" – it looks bad to NOT be certified.** Two overarching ideas lead to this construct.

Motivation 1/Overarching Idea-1 (Table 4, IA)

Respondents made strong statements that environmental pressure on politicians influences which certification is pursued. For instance, they made statements such as:

- *"There are all these portions of DNR-managed regions that have an HCP, but they're not FSC certified. The little pockets that are certified to FSC are in response to environmental activism. You gotta carry King County to be elected as a statewide official." (INT1)*

- *"There's a difference in east vs. westside. The forests are different but also the trusts are different. They don't complain as much on the eastside..." (INT7)*

- *"There is less pressure in some regions to go to FSC. Its' different in the Straits[east Olympic peninsula] than the west Olympic peninsula; the Straits are politically more in the bucket of South Puget, which is FSC-focused." (INT12)*

<u>*Motivation 1/Overarching Idea-2 (Table 4, IB)*</u>

Respondents felt that the same pressure put on politicians also weighs on agencies and industry professionals to certify. They likened it to "*keeping up with the Joneses*" – that certification is now an industry standard that everyone must meet, and "*sometimes there's a carrot and sometimes there's a stick*. *This is a bit of a stick*." (INT6). Other statements that support this overarching idea included:

- **"***So, I think it's (certification) is an industry standard. That's what it does for us*." (INT2)

- "*The motivation is that, we as an agency, would sort of be hanging apart compared to other industries - SFI specifically - especially in the Pacific Northwest.*" (INT3)

- "*I would not advocate to cut certification, personally or professionally, but we couldn't anyway - it's really built on matching where that industry standard is – we gotta keep up with the Joneses*." (INT7)

- "*I don't think we can NOT be certified; it has more to do with aligning with industry standard.*" (INT11)

- *"SFI in particular, is pretty much adopted by all the major private landowners as well. So, we would have to have a pretty good reason that I wouldn't be able to articulate as to why they would hold themselves to that standard and we didn't. So, from a from a messaging standpoint, I think it would be very difficult to say "no, we don't think we need to go through the process" when it's kind of standard practice*." (INT12)

Motivation-2

The next most dominant theoretical construct as to what motivates DNR to continue with forest management certification **is that Government regulations and good internal workflow make it easy, so why not certify?** Two overarching ideas lead to this construct.

Motivation 2/Overarching Idea-1 (Table 4, IIA)

First, respondents resoundingly commented that federal and state laws, plus DNR policies such as the Policy for Sustainable Forests and the Forest Practices Rules are more restrictive, and more environmentally protective, than either SFI or FSC certification requirements. They cited a variety of examples. For instance, six respondents talked about how policies and regulation are much stricter about logging road construction than the certification requirements. They made comments like:

- "*Roads are the most environmentally damaging thing you do in forestry and the scar never goes away. So, the roads have to be designed for a forest engineer with the experience and knowledge of specialty forest road networks*." (INT 1)

- "*You've got layers of compliance, a good plan. It starts with the road builder requirements and extends to loggers' mandatory training."* (INT 2)
- "*Now, we learned ½ culverts instead of full culverts and bridges are great for fish and they last for over half a century without fish blockages. We put that kind of thing into our policies. Not because of cert, but because it's the right thing to do. It just makes it easy to demonstrate to auditors because we already have it documented for ourselves."* (INT6)

They also frequently discussed the environmental elements of U.S. laws such as the Endangered Species Act, Washington state laws like SEPA (State Environmental Policy Act), and the HCP (Habitat Conservation Plan). In particular, they deemed regulatory requirements in Washington state as more protective of the environment than either forest management program. They stated:

- "*Our HCP and conservation strategies meet federal laws like the ESA. That makes FSC easy.*" (INT 6)
- "*Our laws are more protective of the environment than SFI or FSC. Even without an HCP in some places, we are still meeting the requirements of certification easily*." (INT7)
- "*The HCP is significantly more robust than the Forest Practices Law which everyone in the state has to follow. The HCP goes above what everyone else has to do by law.*" (INT11).

Motivation 2/Overarching Idea-2 (Table 4, IIB)

Respondents said that certification to the SFI Standard is easy for DNR to maintain because of existing workflow and documentation practices. Furthermore, they said that the State Trust Lands HCP makes certifying to the FSC Standard easy in "applicable areas," meaning wherever the HCP covers threatened and endangered species. The HCP covers considerably more acreage

across the state of Washington than is certified to FSC. The only FSC-certified lands are in the South Puget HCP Planning Unit, located in counties surrounding Seattle and Olympia. This overarching idea supports the construct that the HCP makes FSC easy but also leads to the third major Motivation for forest certification. In particular, one respondent summed it up:

- "*Really, the way we capture information for ourselves meets SFI requirements so we don't have to do anything unique… just the way we prepare ourselves and keep compliance notes, so we don't have to do anything extra*" (INT12).

Motivation-3:

A third resounding theoretical construct as to what motivates DNR to continue with forest management certification is "***We want to feel good about what we do and we want to be acknowledged for our good work***."

Three overarching ideas lead to this construct.

Motivation-3/Overarching Idea-1 (Table 4, IIIA)

Respondents discussed the role of certification as an "***external set of eyes to keep us responsible and accountable*.**" Without exception, each respondent believed this to be a positive motivation. They appreciated two levels of oversight: first, the external, independent examination of their practices, and second, internal review and monitoring.

Respondents appreciate that the audit process serves as a 'deep dive' seeking evidence of good practice. For instance, SFI Objective 2 addresses forest health and productivity. This objective is "to ensure *long-term forest productivity, forest health and conservation of forest resources through prompt reforestation, deploying integrated pest management strategies, minimized chemical use, soil conservation, and protecting forests from damaging agents*" (SFI-Standard, 2022). Respondents appreciate that DNR's Forest Practice rules, plus federal and state

laws, are prescriptive enough to guide forest managers to meet the metrics for this objective. They generally believe the regulations are sufficient but expressed gratitude that an external authority reviews and comments on success, or provides guidance on how to improve when needed.

Respondents were also grateful that annual audits compel a priority to spend time each year evaluating their own processes and outcomes prior to the auditors' inspections. Because it is prioritized, time can be spent examining results and workflow, allowing reflection and discussion for improvements if necessary.

Motivation 3/Overarching Idea-2 (Table 4, IIIB)

The second overarching idea supporting theoretical construct Motivation-3 is that **certification is a tool to get policy and procedures examined and prioritized by administration**. Certification requires evidence for each metric of every objective (there are hundreds of metrics for both SFI and FSC). Evidence can be provided as documentation, observable evidence during field tours, and interviews with DNR personnel, tribal partners, logging companies, neighbors, citizens, trust beneficiaries, or other stakeholders. Respondents appreciate that the documentation and field tour preparation requires them to self-analyze why certain practices are followed, where and why they are done, and what could be improved upon. Through monitoring and reflection, respondents reported they are better able to make policy and procedural recommendations for managerial consideration.

Several respondents commented that certification can be used to escalate issues that have been put on the "back burner." For instance, multiple respondents commented that the decadal eastside sustainable harvest calculation is overdue. This has caused some internal frustration, and respondents indicated that if the SFI audit resulted in either a "Statement of Non-Conformance" or an "Opportunity for Improvement," that greater priority would be given to accomplishing this task.

They expressed confidence and appreciation that certification is a tool that helps shift managerial priorities.

Motivation 3/Overarching Idea-3 (Table 4, IIIC)

Another idea supporting Motivation-3 is that respondents expressed "***it feels good to be told we are doing a good job.***" Krippendorff (1980) theorizes that social science researchers are well advised to acknowledge the intensity (or strength) of a belief or motivation in content analysis (Krippendorf, 1980). In this study, respondents strongly expressed a belief their work has value and integrity. They said they are proud to receive "clean" audit reports. One respondent said:

- "*It does give people kind of a pat on the back when you get a good clean audit. It means something for people to feel good about that. That's probably where the big bang for the buck is.*" (INT5).

And yet, in contrast, they also experience frustration and despair with some public responses to DNR practices and timber harvests. One respondent stated:

- "*We get attacked all the time for every reason…it's draining, exhausting, soul-crushing, to be constantly told you are wrong and not to have any basis other than 'you are DNR*'."(INT4).

And bridging the gap between those emotions is another respondent's comment:

- "*One of the advantages of having certification is it's a third-party audit, right? We have stakeholders that really love what we're doing. We have stakeholders that really dislike what we're doing and pretty much everything in between? And so, we can tell everyone that we're managing our lands appropriately. You know, we have the toughest Forest Practice Rules, et cetera, right? We try to be as open as possible with our processes but*

having a third-party come to the same conclusion or say that we're following best management practices and these audit standards, I think that has a benefit in itself -- Just the fact that it's not us saying it." (INT12)

BARRIERS Analysis

In general, respondents did not articulate any major barriers to SFI certification. But each respondent identified many issues with certification to the FSC Standard. As with Motivations, the emergent theoretical constructs were very consistent among respondents.

Table 5: Barriers. *Theoretical constructs for motivations are based upon overarching ideas (alphabetized summations). The overarching ideas are supported by repeated comments by respondents (numbered statements). Some repeating ideas here are verbatim, but are summations of statements from multiple respondents.*

Barrier 1: FSC International is the major impediment to FSC certification.

A. *FSC International is slow and nonresponsive.*
   1. I don't have a problem with the certifying bodies that do the audits, but their reports have to get approved by FSC-International which takes a long time. That's my beef with them.
   2. Everything has to be approved by FSC-International and that is very, very slow.
   3. No one can ever get local approval – it goes all the way back to Europe.
   4. FSC is slow and cumbersome.

B. *FSC International rules don't make allowances for U.S. laws.*
   1. Their European origins affect their rules. Their definition of forest worker doesn't consider the role of contractors.
   2. FSC-International requires everyone to sign a TLA, which is essentially a legal statement of loyalty.

C. *FSC's European roots dictate rules that are irrelevant to U.S. ecosystems and U.S. social factors.*
   1. FSC initially restricted use of machinery to 200 hp. That's not enough to handle big trees.
   2. Vocabulary conflicts, like definitions of "salvage" or "plantation" are triggers.
   3. "*Indigenous relationships are different here than in the Amazon or Indonesia. FSC-International rules would be highly insulting to tribes here: we work government to government*."

Barrier 2: FSC makes every step harder than it needs to be.

A. *FSC pesticide policies are a major hoop to jump without environmental benefit.*
   1. FSC has separate policies for certain factors (like pesticides) – their pesticide policy requires a separate mini-EIS (ESRA) for all use. Each separate chemical needs its own ESRA which is somewhat painful to write up.
   2. FSC adopted a new pesticide policy in 2019 or 2020. That was a pretty large pain in the neck. The thing about the pesticide polices is that we had to create these very long documents (ESRA's) that explained what we were using, when, how much, why, what we are doing to avoid or replace using them… we don't use them except when absolutely needed. I feel like our process is defensible. It didn't change our practices – it just took a lot of documentation.

B. *FSC Standards and metrics lack consistency, and FSC fails to provide support or guidance.*
   1. FSC International is completely inconsistent. Every state DNR has a different TLA with different wording in each one of these things.
   2. The logger certification thing was problematic when that changeover happened. It wasn't smoothly implemented for sure.
   3. There are 9 (NINE!) different FSC "Standards" in the U.S. alone. If they decide something is important for the environment, they should say it's important everywhere. Like, they have certified loblolly plantations all over the south – they look like barren cornfields that are terribly environmentally destructive. But we can't have plantations here. If plantations aren't good here, they aren't good there, either. It should either be a Standard or it shouldn't be.
   4. Just to maintain the status quo is somewhat challenging because FSC continually changes the rules that they impose.
   5. One of my criticisms with of FSC is they'll create rules that are very difficult or impossible to follow, and then create "trapdoors" in the rule so that organizations who can't follow those rules can get around the rule and still maintain their FSC certification. I just feel like that's dishonest. It's frustrating for us, but also creates skepticism in the community.

C. *SFI is logistically easier than FSC.*
   1. FSC has regional standards which is difficult for multi-state agencies. If you're a company that manages across the nation you don't want to have a whole bunch of different management standards to follow. So, more companies choose to go with SFI. That makes FSC less of an industry standard than SFI.
   2. We don't have FSC in our region because we don't have the staff time and resources to pursue the onerous documentation they require. With SFI, we just show them what we already are doing.
   3. It's good to have the same Standard internationally but the metrics should be appropriate to each region. For instance, FSC has a minimum tree density requirement that the eastside could never meet. FSC is "micro-detailed" like this - very prescriptive. This is the opposite of SFI standards which are not "micro-detailed" and allow BMPs [Best Management Practices] to be followed that are dependent upon the ecosystem.
   4. FSC has blanket requirements around spray application, whereas SFI, if I'm remembering correctly, want you to have an integrated strategy tailored to the environment. SFI wants to see that you're not just randomly spraying, but that you're looking at units individually and coming up with plans to manage what's on site. We have all that documentation anyway and share it with the auditors. But FSC requires an incredible amount of paperwork in a particular format that is a lot of wasted effort.
   5. Getting a contract with an FSC auditor is problematic. Other states are having the same issue. There just aren't that many certifying bodies that want to do FSC in the U.S. anymore.

Barrier 3: Certification to SFI or FSC requires time and money — with no economic return.
   1. It costs a lot to certify; both in money and in time. But there is no economic return on the investment.
   2. And I will tell you that none of the certification has earned us a dollar.
   3. The economics for either one really just doesn't pan out.

Barrier-1

Respondents emphatically expressed their opinions that "dealing with" **FSC-International is the major impediment to FSC-certification** (***Table 5, Barrier 1)***. One respondents explained that:

- "*Everything with FSC is horrible for the auditors to deal with. Everything has to go for approval back to Europe. They're very slow, cumbersome. And so, just from a pure paperwork side of the auditing — it is absolutely horrendous. And so that's why I wouldn't go with FSC*." (INT5)

A second respondent explained that even though the people in office in Europe have not seen the documentation nor forests they are certifying, they still require audit reports and other documentation to be approved by the governing board. This respondent added:

- "*So, what type of thing would have to go for approval back to FSC-International? When you complete a surveillance audit, you have to go back to them for approval. Can't be a local approval - it goes all the way back to Europe for approval*" (INT10).

In addition, many respondents mentioned that FSC is slow to change when there are major issues which need to be addressed. Some of these issues arise because FSC International rules don't make allowances for U.S. laws (***Table 5, Barrier 1B***). One issue that came up repeatedly in the interviews is the definition of forest worker. Some responses on the topic are:

- "*Their European origins affect their rules. For instance, they require FSC Forest Managers to provide insurance, training, and other benefits to "all forest workers" doing the forest management activities (e.g., harvesting or planting). But in the U.S., these are almost always contractors, independent logging companies that bid to buy timber from*

us. DNR CANNOT legally provide benefits to the loggers cutting trees; they are not our employees" (INT4)

- "*Some metrics for the Standard should be country specific, not global. For instance, the definition of "forest worker" has to be changed here in the USA. But everything goes through FSC-international and that is very, very slow*" (INT3).
- "*FSC's definition of forest worker includes contractors and people for whom we CANNOT provide some of those things (training, insurance, benefits…). Everyone working on our land is covered by L&I but the state cannot legally provide them with benefits*" (INT10).
- "*FSC workers' rights indicators are a good example of FSC-International being a problem. When FSC-International wrote those indicators, they were envisioning untenable work conditions in Indonesia or the Amazon or wherever there's very little oversight. Those are legit human rights catastrophes FSC is trying to address, which is great. But in the U.S. – we're not perfect, we have illegal immigrants that are treated very poorly. But US rules don't jibe with what International was envisioning so it's tough for us to implement some of those rules, like providing good housing or clothing allowances*" (INT3).

Another issue posing a problem for DNR in Washington state (as well as other state DNRs), is the FSC-International requirement for all forest managers to sign a legally-binding document called a Trademark License Agreement (TLA). One respondent explained what a TLA is, and why it poses a problem for DNR:

- "*A Trademark License Agreement (TLA) is a "commitment to FSC" and an oath to "strive to certify all lands to FSC." We cannot legally sign a statement that*

says our first commitment is to FSC because our first legal commitment is to the Trusts. Plus, it might not be in their [the Trusts] best interests to certify all the lands to FSC. Other state DNR's face the same issue; Michigan and Pennsylvania might drop FSC because they can't sign their TLA" (INT4).

While it might be expected that DNR personnel who work in management are likely to cite issues with the slow response of FSC-International, or legal issues such as the TLA or forest worker definition, the field personnel also cited multiple examples of issues where FSC's European roots dictate rules that are irrelevant to U.S. ecosystems and U.S. social factors. For instance, several of the foresters mentioned equipment limitations:

- *"FSC had this restriction on the horsepower of machines we could use in the woods. That works in Sweden after centuries of logging. It doesn't work here. Our trees are too big and too heavy. All the low-power equipment we could get was from Timberjack from Sweden or Finland and it broke regularly, and parts were hard to get. They finally had to change that horsepower limitation if they wanted to stay in the U.S. or Canada" (INT1).*

- *"Around the time FSC came out, we were just getting cut-to-length equipment. That's good for the environment because we use more of every felled tree. But it takes power to run the processor and those saws. So, this rule limiting hp was just not good for a lot of reasons, including environmentally*" (INT 2).

Another respondent explained an issue that exists because of vocabulary differences between Europe and the U.S. They said:

- "*There are vocabulary differences that are real trigger words. Like "salvage." We have timber salvage sales that include harvesting and those (FSC) rules*

> *apply here. But we also have cedar salvage which doesn't usually include harvesting – folks are collecting leftover cedar for roof shakes or boughs for holiday wreaths. There are particular rules you gotta follow when harvesting that don't apply for other types of permits, like collecting cedar residuals or salal. But if our permits are called "cedar salvage" (which they are), FSC wants those permits to fall under harvesting rules, with replanting, etcetera. That doesn't make any sense whatsoever. (INT4).*

A second vocabulary word that creates problems is "plantation." FSC formally defines a plantation as "*A forest area established by planting or sowing with using either alien or native species, often with one or few species, regular spacing and even ages, and which lacks most of the principal characteristics and key elements of natural forests*" (FSC-Standard, 2022, p. 28). While FSC has an exception for north temperate forests that are naturally composed of only a few tree species, this word is used in the PNW very frequently for "even-aged silviculture," a method of harvesting and then replanting with a few dominant species. West of the Cascades in Washington, this results in predominantly Douglas fir and western red cedar "plantations" that can otherwise meet all of the FSC indicators for ecological health. But during the field observations, it was evident that this word was used frequently by people working in the forests and yet caused apparent alarm in the auditor, requiring a long conversation about what was meant by the word.

Barrier-2

A second barrier to FSC certification can be summarized as "**FSC makes every step harder than it needs to be.**" Even though FSC-US has some authority to adjust FSC-International rules to the 9 regional FSC-US Standards (***Fig. 9***), respondents specifically cited

FSC pesticide policies as creating a paperwork headache that fail to spur additional environmental benefit, that FSC Standards and metrics lack consistency, and that FSC fails to provide support or guidance to implement shifting indicators of compliance. These complaints were especially true in comparison with certifying to the SFI Standard, which respondents unilaterally stated is logistically easier than FSC.

For instance, respondents accept SFI's oversight for use of pesticides and herbicides, noting that employees are required to document details such as the chemical used, quantity, reason for use, what alternatives were used or considered, plus training and safety protocols. In contrast, respondents commented that documenting the same type of information in the format required by FSC is "onerous" and creates a barrier to the FSC Standard.

Respondents made statements about other difficulties with FSC such as:

- *There are 9 (NINE!) different FSC "Standards" in the U.S. alone. If they decide something is important for the environment, they should say it's important everywhere. (INT4).*
- *"FSC has regional standards [in the U.S.] which is difficult for multi-state agencies. If you're a company that manages across the nation you don't want to have a whole bunch of different management standards to follow. So, more companies choose to go with SFI. That makes FSC less of an industry standard than SFI" (INT5)*
- *"Getting a contract with an FSC auditor is problematic. Other states are having the same issue. There just aren't that many certifying bodies that want to do FSC in the U.S. anymore. It's easier to find certifying bodies that will respond to an SFI contract" (INT10).*

- "*FSC has separate policies for certain factors like pesticides. Their pesticide policy requires a separate mini-EIS [Environmental Impact Statement]— called ESRAs — for all use. Each separate chemical needs its own ESRA which is somewhat painful to write up" (INT4).*
- "*FSC adopted a new pesticide policy in 2019 or 2020. That was a pretty large pain in the neck. The thing about the pesticide polices is that we had to create these very long documents (ESRA's) that explained what we were using, when, how much, why, what we are doing to avoid or replace using them… we don't use them except when absolutely needed. It didn't change our practices – it just took a lot of documentation* (INT3).
- *The logger certification thing was problematic when that changeover happened. It wasn't smoothly implemented for sure (INT1).*
- *Just to maintain the status quo is somewhat challenging because FSC continually changes the rules that they impose (INT10).*
- *One of my criticisms with of FSC is they'll create rules that are very difficult or impossible to follow, and then create "trapdoors" in the rule so that organizations who can't follow those rules can get around the rule and still maintain their FSC certification. I just feel like that's dishonest. It's frustrating for us, but also creates skepticism in the community (INT11).*

Almost all complaints about certification were targeted specifically at FSC, and rarely toward SFI. When discussing barriers, if SFI was mentioned, it was generally to contrast how much easier the logistics are as compared to FSC processes. Overall, respondents are glad to be certified to SFI – because of the benefits previously mentioned. When talking about barriers, they reiterated that DNR forest management requirements already meet or exceed both SFI and

FSC requirements, so meeting benchmarks is not an issue. Rather, the difference in how to document compliance to the metrics for FSC versus documenting compliance to SFI is what creates the barrier. Respondents made comments such as:

- *"We don't have FSC in our region because we don't have the staff time and resources to pursue the onerous documentation they require. With SFI, we just show them what we already are doing" (INT12).*
- *"FSC has blanket requirements around spray application, whereas SFI, if I'm remembering correctly, want you to have an integrated strategy tailored to the environment. SFI wants to see that you're not just randomly spraying, but that you're looking at units individually and coming up with plans to manage what's on site. We have all that documentation anyway and share it with the auditors. But FSC requires an incredible amount of paperwork in a particular format that is a lot of wasted effort" (INT3).*

Barrier-3

The third identified Barrier to certification applies to both SFI and FSC, and can be summarized as "**Certification to SFI or FSC requires time and money – with no economic return."** Representative statements from respondents about this topic include:

- *"It costs a lot to certify; both in money and in time. But there is no economic return on the investment"(INT1).*
- "*It became very difficult, if not impossible for us to know whether FSC certification got us any extra money, it's certainly cost us money. It's pretty easy to figure how much it costs us. The economics for either certification program really just probably doesn't pan out.*" (INT3)

While respondents often talked about the economic and time investment required to maintain certification, the intensity of feeling toward this barrier was low. Instead, respondents largely viewed it as a necessary expenditure of resources that was well-accepted. Furthermore, much of the time investment is largely born at DNR by the Certification Project Manager, indicating DNR's commitment to supporting certification as a necessary operating procedure. During annual audits, one or two dozen additional employees become involved in the planning and process of the audits. But several respondents in the interviews, and additional field personnel during the observed field audits, made comments that the annual audits are very similar to other "tours" they give every year to a variety of stakeholders.

Demographic Comparisons of Motivations and Barriers

Managerial and Field Staff Comparison

The number of coded textblocks can be used as an indicator of how much emphasis was spent discussing a topic. By this measure, managers talked about barriers far more than any other coded topic; in fact, they spoke about barriers at nearly three times the rate they talked about motivations for forest certification: for managers, 60% of tagged blocks of text were coded as Barriers whereas only 22% of tagged textblocks were coded as Motivations (***Table 6***). In contrast, field staff talked nearly equally about Barriers and Motivations (29%: 30%)(***Table 6***). This appeared to be because field staff were very often surprised (and pleased) that certification was not as difficult as they originally anticipated.

Table 6: *Percentage of coded textblocks in each theme by Role, Certification Experience, and Tenure.*

	Role		Certification Experience		Years at DNR	
Theme	**Mgmt**	**Field**	**Yes**	**No**	**> 10 years**	**< 10 years**
Barriers	60%	29%	62%	21%	45%	62%
Motivations	22%	30%	22%	36%	33%	18%

The different emphasis between management and field personnel (e.g., foresters, silviculturists, scientists) can likely be ascribed to the certification responsibilities ascribed to each role. Managers (including the Certification Program Manager) are charged with tasks such as contracting with certifying bodies, legality of signing required forms, most of the evidence documentation, managing the finances of certification, writing pesticide policies, and the logistics of planning audits.

Field staff responsibilities with respect to certification are primarily helping to design audit tours that meet the auditors' specifications and providing subject matter expertise. Each upland region in DNR provides "tours" for a variety of audiences (e.g., stakeholders, learning groups, or the annual Board of Natural Resources tour) each year. Field staff are familiar with finding sites that meet the requirements of the tour and providing information to the Certification Project Manager such as driving times between sites, road conditions, and safe communication channels with active logging crews. Respondents that work in the field stated that the audit tours are a routine part of their jobs and therefore "not a barrier." Some comments from field respondents indicated that, indeed, they enjoy the tours and the opportunity to share their subject matter expertise. Some comments from field respondents include:

- " *What is the impact of the audits? Next to nothing. In our region, we only have SFI certification. South Puget has an audit every year for FSC, plus every third year for SFI. But, for us, we only have the audit once every three years." (INT 9)*
- *"That audit was a fun one because we'd been doing stream restoration work… that was a cool part of the tour."(INT 11)*

One respondent who had field experience and is now in management, made comments that demonstrated their familiarity with "both sides" of the audit process, and placed greater emphasis than "field-only" personnel on the work involved:

- "*The audit tours usually come with a lot of division folks, plus the region folks for local expertise, plus of course the audit staff, and that adds complexity; where to put everyone overnight, vehicles, safety gear, food, how far can people walk into wooded areas. We have to brush out trails and practice the tour to see how long it takes to drive from site to site. So, a two-day tour means at least one day of just driving the tour route beforehand to figure out the timing. It's a week of preparation with a lot of people*." (INT 12)
- *"Then there's two days at least where they're just in office in Olympia. It doesn't impact the regions but it's a workload for the Olympia staff. It's only every three years for a particular region, but it's every year for DNR overall." (INT 12)*

Overall, managers viewed certification as considerably more of a workload than field-only personnel. This was particularly true for FSC certification because of the additional paperwork. One respondent commented:

- "*The agency wants to stay with FSC but it's becoming onerous to keep them. Other states are potentially dropping them. FSC might just completely disappear in the United States*" (INT 10).

Certification Support Experience Comparison

When examining potential differences between individuals who have certification support experience as opposed to no involvement in a support role, it is clear that "Certification Experienced" individuals focused on barriers and motivations in a manner that is nearly identical

to that of "Managers" (***Table 6***). Managerial respondents discussed Barriers:Motivations at a 60:22% ratio. The "Certification Experienced" personnel discussed Barriers:Motivations at a 62:22 % ratio. The similarity can almost certainly be attributed to the fact that, in this study, the only "Certification Experienced" personnel were also "Managerial" staff rather than field staff. In effect, the "categories" of Management/Field and Certification Experience/Not-Experienced are completely linked because the only individuals in Certification Experienced roles also serve an managerial function. In reference to potential future studies, it could be of interest to determine if this is always the case.

Tenure (time employed by DNR) Comparison

Only 2 of the 12 people interviewed have been employed by DNR less than 10 years. One of them is in a managerial role and has extensive experience in certification support. The other serves in a field position and has no experience in administration or managerial certification support, but has participated in field audits and providing subject matter expertise. When discussing Barriers and Motivations, these two individuals discussed barriers over three times as often as they discussed motivations. These two people talked about barriers during more than 60% of the interview, and motivations less than 20% (Table 6). In contrast, the 10 personnel who have been with DNR for greater than 10 years discussed barriers and motivations more equally, with barriers discussed about 45% of the interview and motivations about 33% (Table 6).

Despite the small sample size of 12 interviews, it appears that that the longer the respondents have been working with DNR, the greater their acceptance of certification as a standard operating procedure, discussing barriers much less than "newer" personnel (45% versus 62%), and they discussed motivations much more than "newer" personnel (33% versus 18%).

Regional Comparison

A limitation in comparing responses between regions occurs because the number of individuals representing each upland region is small. When including the five respondents who work statewide and therefore serve as a delegate for all regions, the number of representative voices ranges from 6 to 8 (***Table 2***). One respondent (INT1) works or has worked in two regions (NW, NE). Similarly, another respondent (INT7) also works or has worked in two regions (SE, SPS) (***Table 2***). Six of the respondents have worked, and continue to work, only in one region during their employment with DNR. This leads to a small sample size for each individual region when excluding the "statewide" respondents. Nonetheless, it is instructive to examine differences between regions.

Given that Barriers was a dominant emphasis of conversation when all respondents were categorized by Role (Management or Field), Certification Experience, or Tenure (years at DNR), an interesting anomaly appears when examining the emphasis based upon region. In four regions, Barriers remained a dominant conversation point. But in the single DNR upland region with FSC certified forests (South Puget Sound (SPS)) plus its southern neighbor, Pacific Cascade (PC)) (***Fig. 7***), suddenly there was a much greater emphasis on Motivations (perceived as benefits) (***Table 7***). The three individuals who have worked in these regions (excluding the "statewide" voices) talked about Motivations at a rate 3 to 4 times greater than they discussed Barriers. Representatives from all the other upland regions more closely mirrored the general results as broken down by Role, Experience, or Tenure – that is, a stronger emphasis on Barriers to certification, by a factor of 3:1.

The small sample size in each group exacerbates differences in whether Barriers or Motivations was a dominant theme for each region. In addition, individual personalities and the

interview format undoubtedly influenced the emphasis during the interview. For instance, INT8 and INT9 participated together in the same interview. During this interview, INT9 was relatively less talkative than INT8, tended to provide general, nuanced insights to certification, and shied away from judgement of certification as positive or negative. For instance, in the context of whether certification had an impact on environmental outcomes, INT9 made comments such as:

- "*Certification is more critical to regulation of processes in the pulp and paper industry (chain of command) than for forest management" (INT9).*

And in the context of whether certification increases environmental sustainability, this respondent said:

- "*Well, certification sure doesn't change anything about how we engineer logging roads" (INT9).*

Table 7: *Percentage of coded textblocks by Region. Numbers in parentheses are the number of respondents that work or worked in that region, excluding "statewide" respondents. INT1 worked in two regions (NW, NE). INT9 worked in two regions (SE, SPS). The 5 statewide respondents represent all six upland regions. Therefore, the total number of representative voices in each region is 5 plus the number in parentheses.*

Theme	SPS (2)	PC (1)	NW (2)	Oly (1)	SE (1)	NE (3)	Statewide (5)
Barriers	14%	10%	41%	50%	0%	52%	62%
Motivations	48%	45%	28%	17%	20%	22%	22%

Despite differences in the emphasis on Motivations or Barriers between the roles, certification experience, tenure, or regions, the Motivations and the Barriers that were identified were resoundingly uniform among all respondents. Regardless of how individuals fit within the organization, there is strong agreement about what motivates personnel to be supportive of forest certification and strong agreement about what barriers remain.

Ch. 5 Discussion, Conclusion, and Future Research

This thesis examined the motivations of and barriers to forest certification of Washington state public trust lands. This chapter discusses more deeply the findings in the previous chapters, presents how previous barriers have been resolved, present conclusions constructed from the research, describes limitations of this work, and makes suggestions for future research.

Comparison with Previous Research on Global Findings

Over the past quarter century since the inception of forest certification programs, dozens of studies have investigated various aspects thereof, including whether certification positively impacts "sustainability" (however it might be defined), public opinion and market response to certification, and which structural factors influence decisions to adopt forest certification. With consistency around the globe, those studies have found the following:

- The ecological impacts related to certification are highly dependent upon several factors, primarily the geographic region and associated biophysical properties, legal oversight, and social parameters. In places like the Amazon, Indonesia, or Russia, it seems that certification compels greater changes in forest management but in places like the U.S., regulatory measures generally exceed certification requirements.
- Generally, public impressions have been, and continue to be, that FSC is "environmentally minded" and SFI is "industry friendly" despite both evidence and opinions that the programs are now quite similar to one another.
- Forest managers believe certification 'signals' responsible forest management to the public.

- The financial cost of certification is difficult to quantify and likely is not compensated for through an increase in revenue associated with certified wood products, although this seems to be readily accepted as a "cost of business."
- Forest workers appreciate the requirements for continuous professional training and development associated with certification.

This study did not examine the ecological impacts of forest certification, nor the public impressions of FSC and SFI. However, this study did examine the respondents' *beliefs* about the ecological impacts of certification and respondent impressions of FSC and SFI as either ecologically- or industry-sympathetic. Respondents believe forest certification programs are beneficial on a global scale, and are an effective monitoring method to encourage forest landowners to manage in environmentally and socially responsible ways. Respondents said:

- "*If there were NO rules, some land managers and owners would be thinking about all the factors that go into healthy balanced forest management, but others not so much. So, having certification is a good checking system*" (INT7).
- " *What it does is it stops people and makes them at least think that it's somebody looking over their shoulder other than their boss. That hey, there's accountability there*" (INT 5).

However, respondents stated their beliefs that certification of DNR-managed trust lands led to no added ecological or social benefit in Washington state because existing laws and policies in Washington already compel practices that meet or exceed certification requirements. Some respondents believed these requirements are sufficient but others felt that neither certification nor regulatory practices (including an HCP) are protective enough.

- *"I believe that once you achieve habitat, we should lock it in place and keep it there. But neither the HCP nor certification keep us from doing this harvesting pattern that might contribute to the extinction of the NSO [Northern spotted owl]*" (INT6).

Counter to global research findings that the public ascribes greater environmental benefits to FSC relative to SFI, respondents to this work do not believe that to be true. Most respondents made statements to the effect that the two programs have nearly identical requirements, but the workflow required to document them are different. They unequivocally stated the process is easier with SFI. So, while respondents did not agree that FSC is more environmentally focused, they did agree that SFI is more "industry friendly" as demonstrated by SFI's support of SFI Implementation Committees (SICs), logger training, and greater flexibility in demonstrating compliance to requirements. General respondent comments include:

- "*The two certifications have become not quite interchangeable, but very similar. SFI has improved environmentally. FSC has gotten more realistic. You've also got some acceptance by both parties (meaning industry and environmentalists) that SFI and FSC are getting closer together"* (INT1).
- "*A lot of people say that SFI is industry based and it is too timber friendly, but it's really not from my experience*" (INT5).
- *"I think there's a misunderstanding generally of what FSC accomplishes. There's mis- or disinformation from people who do understand the FSC certificate to activists, the public, potential consumers about what FSC means*" (INT3).
- *"I've read in publications produced by environmental groups in Washington that if everything was FSC-certified, we wouldn't have clearcuts anymore. And that's not true" (INT11).*

- *"There's nothing in the FSC Standard that would prevent us from doing even-aged management on 100-acre units of mostly 100-year-old trees. Those would be FSC-certified logs as long as we followed all of all of our own rules and all the rules in the FSC Standard" (INT3).*

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- *"I think there's a misunderstanding generally of what FSC accomplishes. There's mis- or disinformation from people who do understand the FSC certificate to activists, the public, potential consumers about what FSC means*" (INT3).

This study found strong concurrence with the other three global consensuses: all respondents felt that certification is a necessary signaling of responsible forest management, that

certification costs considerably more than the revenue generated thereby, and that certification compels beneficial learning for DNR personnel.

Comparison with Previous Research on Structural Factors

A subset of the previously mentioned studies identified 5 structural elements which influence whether forest managers decide to adopt forest certification. These structures are regulatory and legislative mandates, economics, localized public politics, land ownership, and social elements (Lombardo et al, 2021; Hălălişan et al., 2019; Tikina et al., 2008; Cashore et al., 2004; Cashore et al., 2001).

Findings from these studies include:

- Certification is often a prerequisite to sell to non-U.S. markets and political pressure to sell overseas is a motivation to seek certification, especially to the FSC Standard (Lombardo et al, 2021; Hălălişan et al., 2019; Cashore et al., 2004; Cashore and Vertinsky, 2000).
- Governments that regulate forest management activities to mitigate risk to threatened and endangered species correlate to an increase in certification adoption, presumably because an HCP or similar ESA protection plan must be developed and thereby removes a major "barrier" to certification (Tikina et al, 2008; Cashore et al., 2001).
- Institutions that attract public attention are more prone to experience political pressure, and often have greater uptake of FSC certification as compared to SFI (Cashore et al, 2005; Cashore et al., 2001).

The first finding is irrelevant to DNR because state agencies are restricted from exporting unprocessed timber which comes from public lands (WAC 240-15-010, WAC 240-15-015(1)(a). However, respondents in this study expressed strong agreement with the second finding in which

the presence of species-at-risk made it easier for DNR to certify the forestlands under agency management because of the necessity of an HCP to meet the requirements of the Endangered Species Act. Further, in 1999, the state legislature passed the "Forests and Fish" law (ESHB 2091) which required upgrading forest roads and increased streamside buffers for all landowners to allow for fish passage and minimize sedimentation to streams. Meeting such requirements also meet the requirements of both SFI and FSC, removing disincentives to pursue certification.

- *"Federal and state rules on roads are prescriptive. Cert doesn't change anything about how we engineer*." (INT8)
- "*We were already well above the bar. And so, we figured, why not?"* (INT3)

In keeping with the third structural finding, above, DNR is an agency that attracts a great deal of public attention. Coupled with the fact that DNR is directed by a publicly-elected official, the Commissioner of Public Lands, leaves DNR open to political pressures from a variety of stakeholders. This includes environmental activists, trust beneficiaries, and tribal governments. When examining the pattern of FSC-SFI-dual certification of DNR lands, some respondents commented on the political pressures they believe compel uptake of FSC certification. In particular, they stated that the more liberal political leanings of King, Pierce, and Thurston county residents tend to pressure politicians toward greater environmental protections, and therefore toward FSC as the perceived "environmentally-focused" certification standard. Indeed, the only DNR upland region with FSC certified forests is South Puget Sound, where these counties are located. Similarly, respondents commented that residents of rural regions like Forks (western Olympic Peninsula) or east of the Cascades "don't complain as much" (INT7, INT12). Therefore, DNR and other forestland managers are less likely to be compelled to seek FSC-certification.

This agrees with Tikini et al (2008) who found that forests near coastal and other large water-body ecosystems in the Pacific Northwest experience greater political pressure by environmentally-concerned public (Tikina et al., 2008), but remote areas tend to have less public criticism of forest management (Tikina et al, 2008). In response to political pressures, certification is a signaling mechanism that DNR has chosen to demonstrate sustainable forest management practices.

The importance of signaling arises when forest managers feel compelled to respond to pressure from the public (e.g., environmental activists, final consumers), shareholders (e.g., trust beneficiaries, in DNR's case), supply chain customers (i.e., mills, purchasers), and a feeling of necessity to "go with the trend."

Eroding Previous FSC Barriers

Respondents frequently mentioned issues that were once barriers to certification but have now been resolved, such as the horsepower limitation previously discussed. Another barrier was that FSC used to be considerably more expensive than SFI. Coupled with that, there were very few Chain-of-Custody-certified mills. One respondent explained:

- "*In the early 2000s when we went to certify, not all the mills were FSC CoC certified. You needed an FSC mill to sell your wood, but there were no such critters. You had to spend three times as much to certify your forests but the mills couldn't even label it*" (INT1).

Since that time, FSC's limitation on machine power and the relatively high cost of certifying to the FSC Standard have been resolved. But the problem with mills remained an issue until recently. For a wood product to be stamped with an FSC ecolabel, it had to come from an FSC certified forest and be handled at every step by FSC-certified CoC operators. But without FSC-

certified mills, there was little market for wood grown in FSC-certified forests. One respondent in this study explained how FSC recently resolved this problem:

- *"SFI was an industry-based thing which the environmental community screamed and kicked about. But the mills were all going to SFI. Finally, FSC came up with their "FSC Mix" and "FSC Recycle" labels. There's still really only one FSC mill in Washington. But they can use wood that's SFI certified now"* (INT1).

Nonetheless, despite FSC's solution of FSC-Mix to solve the mill problem, this respondent added:

- "*I guess to finish with SFI and stuff, I still don't see any reason to go to FSC"* (INT1)

Despite resolution, these barriers decreased the likelihood of early adoption of FSC and that legacy remains because it led to SFI becoming the industry standard.

Changing Standards of SFI and FSC

Over time, both SFI and FSC are incrementally changing and in that process are becoming closely aligned with each other regarding environmental and social requirements. SFI modifies their Standard every 5 years to incorporate new scientific findings. FSC also changes their Standard but multiple respondents explained why this poses a new barrier to FSC but not a barrier to SFI:

- *FSC changes their Standard at random times, so you cannot easily plan ahead for making required changes, whereas SFI regularly updates their Standard every 5 years (except for a delay during COVID). Knowing that changes are coming ahead of time allows land managers to incorporate upcoming changes. For instance, in the SFI 2022 standard, they added Climate Change and Wildfire objectives that are still somewhat*

vague but we can start incorporating those things now and when they tighten up in 5 years (the 2027 standard) we will likely already be there" (INT4).

- *"FSC is TOTALLY different. Their organization doesn't have nearly as much oversight. They have zero idea of how industrial forestry works, and they change their rules all the time. It takes an immense amount of work to keep up with everything they are changing at random times, and how to document we are in compliance. Not only that, but it means changing our practices for the sole purpose of meeting some new crazy FSC idea that has nothing to do with sustainability" (INT10).*

Overall, respondents appreciate that SFI modifications tend to increasing the rigor of environmental requirements. But respondents expressed a variety of opinions about FSC's changes:

- *"With the changes in Standards, SFI has improved environmentally, FSC has gotten more realistic. You've also got some acceptance by both parties -- industry and environmentalists -- that SFI and FSC are getting closer together"* (INT1).

- "*Both organizations, SFI and FSC, are modifying their standards a little bit each time. SFI is tending to become a more environmentally minded and FSC is becoming … uh… more difficult, you know?"* (INT12).

Opinions on Future Certification Decisions

Every respondent indicated that dropping FSC certification would be a welcome change except for their concerns about how the public would interpret that type of action. Respondents made comments about FSC certification such as:

- "*You know, the perception of DNR not being involved in certification would probably be our largest deterrent from a marketing standpoint and from a seller standpoint, from a mental standpoint, from a purchaser standpoint"* (INT11).

- *"There would be a real outcry in the environmental community if we drop or lose FSC certification - even if it's because of a reason like not signing the TLA. They would probably pick it up as a 'DNR lost their FSC certification because they don't want to follow good environmental standards' even though that would not be the case. It might help a little when other states start to drop their FSC certification, but who knows..."* (INT10).

- *"I think we got Major Noncomformance, a CAR – that's a Corrective Action Report - for not signing the TLA in the past. If we can't sign the TLA, and therefore we don't fix the CAR, we could feasibly not get recertified. I wouldn't cry over that"* (INT4).

- *"Frankly, we need to keep FSC for political reasons. We're the largest single landowner, in terms of acreage, in the Pacific Northwest that's FSC-certified... it's in DNR's interest to maintain our FSC certificate and I don't think that has anything to do with ecology much at all. You can imagine the headlines in the Seattle Times if we said we're not gonna do FSC anymore, right? The interpretation would be "DNR is no longer managing their forests sustainably…"* (INT3)

However, every respondent also indicated that keeping SFI is not a burden:

- *"SFI does not have that many barriers – there is just a time burden. So, companies hire a certification manager who sets up a workflow pattern that links internal policies and daily work practices to evidence. And then the company has to maintain the evidence.*

And then once a year, you have the audit. But we already do tours for a variety of audiences and reasons. The audit is a bit more than that because of the office portion but the field portion is part of what we do routinely" (INT5).

- *"There aren't many barriers to keeping SFI because they are industry responsive; they understand forest management. And so, it isn't a burden at all. There is a time burden. You need to have an FTE to get it set up. But once you obtain it, isn't that much work to maintain. It's just workflow" (INT3).*

Conclusion

This study examined the following questions:

Motivations for Certification

1) What factors influence DNR personnel's preferences for forest certification?
2) If certification is desired, which (SFI or FSC) is preferred? Why?
3) Does certification help (or hinder) achievement of management goals?
4) How do certification standards generally compare to legislated requirements, and how does that impact certification decisions?

Barriers to Certification

5) What barriers to certification exist in various DNR upland regions? What creates those barriers?
6) What is needed to overcome barriers to a preferred certification?

The primary factors influencing DNR personnel's preferences for forest certification are public pressure and seeking positive acknowledgement for the work being done. FSC is felt to have barriers imposed by the necessity of engaging with FSC-International and that

documentation processes are more cumbersome for FSC than for SFI certification. Because of the latter, respondents unilaterally prefer SFI over FSC.

Neither certification program impacts management practices or management goals for DNR, largely because federal and state legislation dictates practices that are more stringent than certification requirements. However, in regions without threatened or endangered species, and therefore without a Habitat Conservation Plan (HCP) or similar land plan, FSC requirements would require the development of such. Those plans have historically taken a decade or longer to develop in concordance with the required agencies (US Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration (NOAA)), rendering it a very long process to achieve FSC certification in non-HCP covered areas. This is the greatest single barrier to expanding FSC certification of Washington state trust lands.

DNR's existing state trust lands HCP does cover significantly more land (Fig. 8) than is certified to FSC. Nonetheless, one respondent stated, "*We do have some trepidation about expanding the FSC boundary" (INT3)* because of the difficulty engaging with FSC-International and the "onerous" workflow required.

Asked about how to remove barriers, respondents said overall they largely recommend maintaining the status quo, with just one suggestion for removing a major barrier, and several positive advancements they would like to encourage.

- Respondents recommend maintain SFI certification of all DNR-managed forested trust lands, and maintain the current FSC coverage but not expanding it. They expressed that dropping FSC coverage would result in public backlash that would be harmful to agency reputation.

- There is a strong recommendation against expanding FSC coverage, with one respondent explaining that overcoming the problems with FSC would not result in the most-desired benefit, which is public approval: "*I don't think that it makes any difference if we were to go get FSC and - I hate to sound cynical - but if we were to go get all of our lands FSC certified, the [environmentalist organization] would just find something else to write about*" (INT2).
- Encourage FSC-US to dissociate from FSC-International.
- Better public outreach about what certification is, what forestry is, and what science is being incorporated (or not) in forest management practices.
- Build collaborations and conversations with external agencies (e.g., the Public Engagement Institute, NCASI), educators, and public interest groups.
- Call out innovative practices and reinforce them. One respondent explained: "*There is an opportunity as we go through audits to learn and take the notables, the positives, right out of the audits. I've seen before where a region is doing something very specific and it ends up being a notable on an audit. That might be something that we wanna distribute programmatically. Audits are a learning opportunity because these auditors are looking at a lot of different landowners and there may be something that we can learn from either something we're doing locally or something that the auditors are telling us that they've seen somewhere else that might help our business practices*" (INT11).

In summary, this research suggests that DNR personnel believe forest certification is a valuable operating procedure primarily because of the positive ecological and socially responsible message it sends to the public. It also finds that DNR personnel greatly prefer certification to the SFI Standard over FSC because of SFI's relative procedural simplicity.

FSC was found burdensome to implement, primarily due to paperwork processes and the necessity of engaging with FSC-International. However, having an existing Habitat Conservation Plan in place to meet requirements of the federal Endangered Species Act, makes compliance to the FSC Standard somewhat easier because documentation of environmental and operational procedures is already completed. Respondents to this study commonly stated they did not want to see coverage of FSC-certified lands expanded despite some environmentalist pressure to do so.

Limitations and Opportunities for Future Research

This research was exploratory, with findings representing the collective opinions of 12 purposively-selected respondents. Two iterations of grounded theory strongly indicated this was a sufficient number of respondents because the codes and themes were "saturated" with no new insights emerging in the last 3 or 4 interviews. Indeed, interviews with the 11th and 12th respondents seemed to summarize everything else learned through interviews with the previous 10 respondents. And so, while the respondents were chosen to represent a cross-section of characteristics which might influence the outcomes, saturation was reached fairly quickly.

A limitation in this study is that it did not include stakeholders who are not employed by DNR but are yet impacted by DNR's certification decisions. Impacted parties might include harvesters (i.e., logging companies that bid on DNR timber sales), mills, and trust beneficiaries. Having discovered in this exploratory study that public pressure is a major motivation, the opinions of external stakeholders — including environmental groups — who likely apply some of that pressure might be of great importance. Surveys would work well for a broad spectrum of stakeholders such as these, and have been used successfully by researchers who studied other

aspects of forest certification (Gilani et al., 2017; Tikina et al., 2008; Sample et al., 2003). In addition, future research could include interviews of members of the Board of Natural Resources who ultimately approve major changes to forest management practices such as certification patterns. The BNR is comprised of six individuals who collectively approve decisions regarding forest management. Of 6 BNR members, four are elected officials, including the Commissioner of Public Lands, the Superintendent of Public Instruction (representing a major trust beneficiary), a designee from the governor's office, and an elected county commissioner. Public pressure might have an impact on their views of forest certification and related policy decisions.

Furthermore, these findings cannot directly be applied to federally- or privately-owned landowners, both of whom are likely to have very different motivations and barriers than a state-owned and managed agency. In particular, state trust lands are mandated to act with undivided loyalty to the beneficiaries, as defined by the legislature and the courts. Federally- and privately-owned lands do not have that obligation.

However, in the U.S., there are twenty other states with Departments of Natural Resources that operate under a structure similar to Washington state DNR. Other state DNR's are likely to have many of the same trust responsibilities and associated political pressures. Other state DNR's are likely to face the same issue discussed in this thesis regarding FSC's requirement to sign the Trademark License Agreement (TLA). Those state DNR's would be required to certify to a different FSC-US Regional Standard than the Standard to which Washington State DNR certifies, whereas all states certify to the same (only) SFI Standard. Because state environmental laws differ widely, this could provide an interesting comparison between SFI and FSC uptake in different areas of the U.S.A.

Additional Future Research Topics – Voices from Eliminated Codes and Themes

It is worthwhile to discuss in general some of the codes and themes that were eliminated from this work. In this research, the concern was to understand the motivations for forest certification and to identify the barriers preventing forest managers at DNR from pursuing their preferred practices. However, in answering questions, deeply felt statements were openly shared in several of the interviews. For instance, when discussing the limitations of certification, one respondent expressed sadness that neither regulatory governance nor forest certification programs were sufficiently protecting the northern spotted owl. While these thoughts do not fit within the theoretical framework of this thesis, they are important to include so as to potentially form a basis for future research. Some of these topics are captured here:

- Sustainability: "*Sustainability is the interconnection of three areas: the social/political, the economic, and the physical/biological. Those three have got to overlap for you to have something that is sustainable. And right now, nobody's really sitting at the junction. The environmental community is really good at the social/political, and they feel that the economic and the physical/biological will adapt to the social agenda. The economics don't pencil out for a lot of the suggestions being put out right now, plus other elements get left out of the equation. And science tells us what needs to happen in the physical/biological but some of that isn't economically feasible or socially desirable. And it can't all be just about the economics. But everyone just keeps beating their own drums*" (INT1).
- Harvesting Legacy: *"They used to do things like just go out and put tags around 100 acres and cut everything. There was nothing left on streams. No leave trees. It made it easy. But forestry has become really complex. You know, we're asking a lot of our*

foresters to be able to identify a lot of different features. I think it's probably much more interesting now for the foresters because each place is unique. I tell them it's their canvas — what they leave behind is probably going to be standing there for the next 100 years. That's a pretty big legacy…what do you want to do with it?" (INT6).

- Logging Roads and Harvesting Patterns: *"You know, logging roads are hard to manage, and if they're not managed, you're gonna have landslides. It generally doesn't pay to build to a road with a variable density thinning. There's not enough profit to support the road construction and higher logging costs. That's why an even aged harvest makes a little more sense. Because you go in there, you take all the wood at once and you abandon your way out of there because otherwise, if you've got an active road, you have to manage it and it's expensive. And if you don't, it's catastrophic*" (INT3).
- Recreation Limitations and Outreach: *"It's not that we don't want recreation, it's the fact that we don't have the resources to support the access roads and trails and necessary culverts for water protection. People can't understand why we don't allow you to build a mountain bike trail. And then we turn around and cut 80 acres in the same footprint and they can't understand why"* (INT3).
- Chain of Custody: *"Talk with purchasers. There was a mill in Oregon. I believe the mill name was Herbert Lumber. Another … could have been Starfire Lumber, which is out of business. But that's the only time I can ever remember a purchaser actually specifically being interested in FSC. Get a perspective, the feeling from those purchasers as to how that relationship works between state trust land timber sales they've purchased. It would be interesting and maybe it's a whole other chapter, right? But that's a huge connection to your work here*" (INT11).

This study has discovered the primary motivations for and barriers to forest management certification of Washington state forest trust lands. In addition, it has shared recommendations for future certification decisions and related studies. And finally, this work has shared additional suggestions for research related to forest management practices which respondents feel deeply about; each of which could potentially form "*a whole other chapter, right*?"

References

Anguish, D. 2015. Mass media and the evolution of the environmental movement 1960-1979. *University of Central Florida Libraries.* https://stars.library.ucf.edu/cgi/viewcontent.cgi?article=2350&context=etd

Araujo, M., Kant, S. and Couto, L. (2009) Why Brazilian companies are certifying their forests? *Forest Policy and Economics.* 11(8), 579–585. http://www.unecefaoiufro.lsu.edu/certificate_eccos/documents/2009Sept/ce09_03.pdf

Auld, G., Gulbrandsen,L., McDermott,C. (2008). Certification schemes and the impacts on forests and forestry. *Annual Review of Environment and Resources.* 33, 187-211. https://doi.org/10.1146/annurev.environ.33.013007.103754

Auerbach, C., Silverstein, L. (2003). Qualitative Data: An introduction to coding and analysis. *New York University Press.* ProQuest Ebook Central. Ebook ISBN: 9780814707807. https://ebookcentral-proquest-com.ezproxy.library.wwu.edu/lib/wwu/detail.action?docID=865323.

Azevedo, J. Williams, J., Messina, M., Fisher, R. (2005). Impacts of the Sustainable Forestry Initative Landscape level measures on hydrological processes. *Water Resources Management*. 19, 95-110. https://link-springer-com.ezproxy.library.wwu.edu/article/10.1007/s11269-005-1503-5

Banerjee, A., Solomon, D. (2003). Eco-labeling for energy efficiency and sustainability: a meta-evaluation of US programs. *Energy Policy.* 31(2), 109-123. https://doi.org/10.1016/S0301-4215(02)00012-5

Bhattacherjee, A. (2012). Social Science Research: Principles, methods, and practices. *Textbooks Collection 3. USF Tampa Library Open Access Collections at Scholar Commons.* http://scholarcommons.usf.edu/oa_textbooks/3

Blend, J., Van Ravenswaay, E.(1999) Measuring consumer demand for ecolabeled apples. *American Journal of Agriculture Economics.* 81, 1072-1077. http://dx.doi.org/10.2307/1244086

Bowler, K., Castka, P. & Balzarova, M. (2017). Understanding firms' approaches to voluntary certification: evidence from multiple case studies in FSC certification. *Journal of Business Ethics*. 145, 441–456. https://doi.org/10.1007/s10551-015-2880-1

Bramwell, L. (2012). Historian Lincoln Bramwell on History of the Forest service. *Forest Service video*. https://www.youtube.com/watch?v=EPRDHe9ZTaA

Cashore, B., Van Kooten, C., Vertinsky, I., et al. (2005). Private or self-regulation? A comparative study of forest certification choices in Canada, the United States and Germany. *Forest Policy and Economics*. 7(1), 53-69. https://doi.org/10.1016/S1389-9341(03)00011-X

Cashore, B.; Auld, G.; Newson, D. (2004). Governing through markets: forest certification and the emergence of non-state authority. *Yale University Press: New Haven, UK*. 352. 10.12987/9780300133110

Cashore, B.; Vertinsky, I., Raizada, R. (2001). Firm responses to external pressures for sustainable forest management in British Columbia and the US Pacific Northwest. In: Sustaining the Forests of the

Pacific Coast: Forging truces in the War in the Woods, Eds: D. Alper, D. Salazar. UBC Press, Vancouver. ISBN: 0774808152.

Charmaz, K. (2014). Constructing grounded theory (2nd ed.). *SAGE Publications.* ISBN: 9780857029140

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE Publications*. https://doi.org/10.1177/2050312118822927

Clark, M. R., & Kozar, J. S. (2011). Comparing sustainable forest management standards: A meta-analysis. *Ecology and Society*. 16(1), 3. https://www.ecologyandsociety.org/vol16/iss1/art3/

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*. 13(1), 3-21. https://med-fom-familymed-research.sites.olt.ubc.ca/files/2012/03/W10-Corbin-and-Strauss-grounded-theory.pdf

Counsell, S., & Loraas, K. T. (2002). Trading in credibility: the myth and reality of the Forest Stewardship Council. https://globalforestcoalition.org/wp-content/uploads/2010/12/Trading-in-Credibility1.pdf

Creswell, J. W. (2013). Qualitative inquiry & research design: Choosing among five approaches (3rd ed.). SAGE Publications. ISBN: 9781506330211

Crosman, K. (2011). The army in the woods: records recount work of World War I soldiers in harvesting spruce trees for airplanes. *Oregon Historical Quarterly*. 112(1). https://www.archives.gov/files/publications/prologue/2014/summer/woods.pdf

CRS report. (2011). Forest Certification Programs. EveryCRSReport.com. https://www.everycrsreport.com/reports/R41992.html#_Toc303695323

Dicus, C., Delfino, K. (2003). A comparison of California forest practice rules and two forest certification systems. *CalPoly Digital Commons*. https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1033&context=nrm_fac

Dietrich, W. (1992). The Final Forest: The battle for the last great trees of the Pacific Northwest. *Simon & Schuster.* ISBN 10: 0671729675

DNR-About (n.d.). Washington Department of Natural Resources, About. https://www.dnr.wa.gov/about-washington-department-natural-resources

DNR-Bene (n.d.). Washington Department of Natural Resources, Funding Schools and Services. www.dnr.wa.gov. https://www.dnr.wa.gov/beneficiaries

DNR-Cert. (n.d.). Washington Department of Natural Resources, Forest Certification. https://www.dnr.wa.gov/programs-and-services/product-sales-and-leasing/timber-sales/forest-certification

DNR-FAP. (2020). Washington Department of Natural Resources, Forest Action Plan. https://dnr.wa.gov/publications/rp_2020_forest_action_plan.pdf

DNR-HCP. (1997). Washington State Trust Lands Habitat Conservation Plan. https://www.dnr.wa.gov/publications/lm_hcp_plan_1997.pdf

DNR-PSF. (2006). Washington Department of Natural Resources, Policy for Sustainable Forests. https://www.dnr.wa.gov/publications/lm_psf_policy_sustainable_forests.pdf

Dolphin Safe (n.d.). What Does Dolphin Safe Mean? https://savedolphins.eii.org/news/what-does-dolphin-safe-mean#:~:text=Since%20the%20Dolphin%20Safe%20tuna

Egan, T. (2010). The big burn: Teddy Roosevelt and the fire that saved America. *Houghton Mifflin Harcourt.* ISBN 10: 0618968415

Espinoza, O. Buehlmann, U. Smith, B. (2012). Forest certification and green building standards: overview and use in the U.S. hardwood industry. *Journal of Cleaner Production.* 33, 30-41. https://doi-org.ezproxy.library.wwu.edu/10.1016/j.jclepro.2012.05.004

Fagundes, C., Schreiber, D., Pereira Nunes, M., Fernandes, M. (2021). Perception of Brazilian Companies on the Potential and Concrete Benefits Resulting from the FSC Certification. *Forests*. 12, 1622. https:// doi.org/10.3390/f12121622

Farrell, E., Fuhrer, E., Ryan, D., et al. (2000). European forest ecosystems; building the future on the legacy of the past. *Forest Ecology and Management.* 132(1), 5-20. https://doi.org/10.1016/S0378-1127(00)00375-3

Fernholz, K. et al. (2010.) Forest Certification: A Status Report. *Dovetail Partners, Inc.* http://www.dovetailinc.org

Forsyth, K., Haley, D. Kozak, R. (1999). Will consumers pay more for certified wood products? *Journal of Forestry.* 97(2), 18-22. https://doi.org/10.1093/jof/97.2.18

FSC-Connect. (n.d.). Database search for active Forest Management certificates in the USA. https://connect.fsc.org/impact/facts-figures

FSC-History. (n.d.) Forest Stewardship Council-US, Our History. https://us.fsc.org/en-us/who-we-are/our-history#:~:text=After%20the%201992%20Earth%20Summit,create%20the%20Forest%20Stewardship%20Council.

FSC-Standard. (2022). Forest Stewardship Council-US, FSC Forest Management Standard. https://us.fsc.org/download.fsc-us-forest-management-standard-with-family-forest-indicators.96.htm

FSC-US-Regions. (2011). Forest Stewardship Council-US, Factsheet. https://us.fsc.org/download.regional-variation-in-timber-harvest-limits.203.htm

FSC-Who. (n.d.). Forest Stewardship Council, Who we are. https://us.fsc.org/en-us/who-we-are

Furlow, N. (2010). Greenwashing in the new millennium. *The Journal of Applied Business and Economics.* 10(6). p. 22.

Gale, F. (2007). The consultation dilemma in private regulatory regimes: negotiating FSC regional standards in the United States and Canada. *Journal of Environmental Policy and Planning*. 6(1), 57-84. https://doi.org/10.1080/1523908042000259686

Garolami, E., Arts, B. (2018). Environmental Impacts of Forest Certifications. *Wageningen University and Research, Forest and Nature Conservation Policy Group*. https://doi.org/10.1016/j.forpol.2022.102864

Garzon, A., et. al., (2020). A comparative analysis of five forest certification programs. *Forests.* 11, 863. doi:10.3390/f11080863

Gilani, H., Kozak, R., Innes, J. (2017). A change management model for the adoption of chain of custody certification in the British Columbia value-added wood products sector. *Journal of Change Management*. 18(3), 240-256. https://doi.org/10.1080/14697017.2017.1349163

Griffin, M. (2017). How news has changed. *Macalester Media and Cultural Studies News, April 2017*. https://www.macalester.edu/news/2017/04/how-news-has-changed/

Haener, M., Luckert, M. (1998). Forest certification: economic issues and welfare implications. *Canadian Public Policy, Special Supplement 2 on Forestry Issues in Canada*. 24, S83-S94. https://doi.org/10.2307/3551882

Hălălişan, A., Abrudan, I. and Popa, B. (2018). Forest management certification in Romania: motivations and perceptions. *Forests*. 9(7), 1–16. https://doi.org/10.3390/f9070425

Harris, S. (2007), "Does sustainability sell? Market responses to sustainability certification. *Management of Environmental Quality*. 18(1), 50-60. https://doi.org/10.1108/14777830710717712

Haworth, B., Blinn, C., Chura, D. (2007). Assessment of logger education programs and programming across the United States. *Journal of Forestry*. 105(7), 358-363.

Hayward, J. and Vertinsky, I. (1999). High expectations, unexpected benefits what managers and owners think of certification. *Journal of Forestry*. 97(2), 13–17. https://doi.org/10.3390/f8100364

ISO. (n.d.). ISO environmental labels. https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100323.pdf

Jacobs, O. (2016). An exploratory analysis of environmentally-certified wood products (ECWPs) in the residential leadership in energy and environmental design (LEED) market: 2018 and 2011. *University of Washington ResearchWorks Archive.* https://digital.lib.washington.edu/researchworks/handle/1773/44268

Kadam P., Dwivedi, P., Karnatz, C. (2021). Mapping convergence of sustainable forest management systems: comparing three protocols and two certification schemes for ascertaining the trends in global forest governance. *Forest Policy and Economics*. 133. https://doi.org/10.1016/j.forpol.2021.102614

Krippendorff, K. (1980). Content Analysis: an introduction to its methodology. *Sage Publications*. ISBN 0-8039-1497-0.

Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2004). Grounded theory. *SAGE Publications Encyclopedia of Social Science Research Methods.* 1, 441-444. https://dx.doi.org/10.4135/9781412950589.n381

Lombardo, E., Crescimanno, M., Vrontis, D., Galati, A. (2021).Driving forces affecting the adoption of certifications in the forest-based industry: a systematic literature review. *Journal for Global Business Advancement*. 14(4), 453-478. https://doi.org/10.1504/JGBA.2021.118747

MacCleery, D. (2016). American Forests: A History of Resiliency and Recovery. *The Forest History Society Issue Series, Durham, North Carolina.* https://foresthistory.org/wp-content/uploads/2016/12/American_Forests.pdf

MacDonald, C. (2009). FSC Versus SFI. *Architecture Week.* http://www.architectureweek.com/2009/0812/environment_1-1.html

Melser, D., Robertson, P. (2005). Eco-labelling and the trade-environment debate. *The World Economy*. 28(1), 49-62. https://doi.org/10.1111/j.1467-9701.2005.00674.x

Miles, M., Huberman, A. (1994). Qualitative data analysis: An expanded sourcebook, 2nd ed. *Sage Publications.* ISBN-10: 9780803955400

Moog, S., Spicer, A., Böhm, S. (2015). The Politics of multi-stakeholder initiatives: The crisis of the Forest Stewardship Council. *Journal of Business Ethics*. 128, 469–493. https://doi-org.ezproxy.library.wwu.edu/10.1007/s10551-013-2033-3

Moore, S. Cubbage, F., Eicheldinger, C. (2012). Impacts of Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI) in North America. *Journal of Forestry*. 110(2), 79.

Overdevest, C. (2009). Comparing forest certification schemes: the case of ratcheting standards in the forest sector. *Socio-Economic Review*. 8(1), 47-76. https://doi.org/10.1093/ser/mwp028

Overdevest, C., Rickenbach, M. (2006). Forest certification and institutional governance: an empirical study of forest stewardship council certificate holders in the United States. *Forest Policy and Economics*. 9, 93–102. https://www.researchgate.net/publication/223599205_Forest_certification_and_institutional_governance_an_empirical_study_of_Forest_Stewardship_Council_certificate_holders_in_the_United_States

Ozanne, L., Smith, P. (1993). Strategies and perspectives of influential organizations toward tropical deforestation. *Forest Products Journal*. 43(4), 39.

Patton, M.Q. (2002). Designing qualitative studies: Qualitative research and evaluation methods (3rd ed.). (247-255) *SAGE Publications.* https://aulasvirtuales.files.wordpress.com/2014/02/qualitative-research-evaluation-methods-by-michael-patton.pdf

Rahn, M., Doremus, H., Diffendorfer, J. (2006). Species coverage in multispecies habitat conservation plans: where's the science? *BioScience.* 56(7), 613–619. https://doi.org/10.1641/0006-3568(2006)56[613:SCIMHC]2.0.CO;2

Rametsteiner, E. Simula, M. (2003). Forest certification—an instrument to promote sustainable forest management? *Journal of Environmental Management*. 67, 87–98. https://doi.org/10.1016/S0301-4797(02)00191-3

Rickenbach, M., Overdevest, C. (2006). More than markets: assessing forest stewardship council (FSC) certification as a policy tool. *Journal of Forestry*. 104(3), 143–147. doi:10.1093/JOF/104.3.143

Rubik, F., Prakash, S., Riedel, F. (2022). Integration of social aspects in the German Blue Angel scheme – Views from manufacturers and consumers. Sustainable Production and Consumption. 33, 466-476. https://doi.org/10.1016/j.spc.2022.07.018

Rudel, R., Roper, J. (1997). The paths to rain forest destruction: Crossnational patterns of tropical deforestation, 1975-1990. *World Development*. 25(1), 53-65. https://doi.org/10.1016/S0305-750X(96)00086-1.

RWJF. (n.d.). Grounded Theory. *Robert Wood Johnson Foundation*. http://www.qualres.org/HomeGrou-3589.html

Sample, V., Price, W., Mater, C. (2003).Certification on public and university lands: Evaluations of FSC and SFI by the Forest Managers. *Journal of Forestry*. 101(8), 21–25. https://doi.org/10.1093/jof/101.8.21

Schepers, D. (2010). Challenges to Legitimacy at the Forest Stewardship Council. *Journal of Business Ethics.* 92, 279–290. https://doi.org/10.1007/s10551-009-0154-5

SFI Database. (n.d.). Database search for active Forest Management certificates in the USA. https://sfidatabase.org/search/search-certs

SFI-SIC. (n.d.). SFI: Network/SFI Implementation Committees. https://forests.org/sic/

SFI-Standard. (2022). SFI Forest Management Standard. https://forests.org/forestmanagementstandard/

Simmon, N. (2017). The SAGE Encyclopedia of Communication Research Methods. Chapter DOI: https://dx.doi.org/10.4135/9781483381411

Strauss, A. & Corbin, J. (1994). Grounded Theory Methodology. In NK Denzin & YS Lincoln (Eds.) Handbook of Qualitative Research. *SAGE Publications.* 217-285. https://www.depts.ttu.edu/education/our-people/faculty/additional_pages/duemer/epsy_5382_class_materials/grounded-theory-methodology.pdf

Suzuki, N., Olson, D.H. (2008). Options for biodiversity conservation in managed forest landscapes of multiple ownerships in Oregon and Washington, USA. In Brockerhoff, E.G., Jactel, H., Parrotta, J.A., Quine, C.P., Sayer, J., Hawksworth, D.L. (eds) Plantation Forests and Biodiversity: Oxymoron or Opportunity? *Topics in Biodiversity and Conservation*. 9. https://doi.org/10.1007/978-90-481-2807-5_5

Swanson, B. (2020). The U.S. Army Spruce Squadrons in the first World War. http://www.swansongrp.com/spruce.html

Taylor-Powell, E., Renner, M. (2003). Analyzing Quantitative Data. *University of Wisconsin-Extension*. http://learningstore.uwex.edu/assets/pdfs/g3658-12.pdf

Teddlie, C., Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*. 1(1), 77-100. doi 10.1177/1558689806292430

Tiesl, M., Roe, B., Hicks, R. (2002). Can ecolabels tune a market? Evidence from DolphinSafe Labeling. *Journal of Environmental Economics and Management*. 43(3) 339-359.

Tikina, A., Kozak, R., Larson, B. (2008). What factors influence obtaining forest certification in the U.S. Pacific Northwest? *Forest Policy and Economics*. 10(4), 240-247. https://doi.org/10.1016/j.forpol.2007.10.006

USGBC-ACP. (2019). Alternative Compliance Pathway. *U.S. Green Building Council.* https://www.usgbc.org/articles/earning-leed-points-certified-wood

USGBC-LEED. (n.d.) LEED Certification. *U.S. Green Building Council.* https://support.usgbc.org/hc/en-us/p/leed-certification

Vincent, J. (1990). My chance: Don't boycott tropical timber. *Journal of Forestry.* 88(4), 56. https://doi.org/10.1093/jof/88.4.56

Wallinger, R. (2003). SFI: Sustainable Forestry Initiative Program. *Journal of Forestry*. 101(8), 16-19.

Washburn, M., Miller, K. (2003). FSC: Forest Stewardship Council Certification. *Journal of Forestry*. 101(8), 10-13. https://www-proquest-com.ezproxy.library.wwu.edu/docview/220825179/fulltext/6B92978F99E24F59PQ/1?accountid=15006

WFPA-Forestland. (n.d.). Washington Forest Protection Association, Sustainable Forestry. https://www.wfpa.org/sustainable-forestry/

Wilhere, G. F. (2002). Adaptive management in habitat conservation plans. *Conservation biology*. 16(1), 20-29. https://doi.org/10.1046/j.1523-1739.2002.00350.x

Williams, G. (1999). The spruce production division. *Forest History Today*. https://foresthistory.org/periodicals/spring-1999/

Williams, G. (2005). The USDA Forest Service-the first century. *USDA Forest Service Office of Communication.* https://www.fs.usda.gov/sites/default/files/media/2015/06/The_USDA_Forest_Service_TheFirstCentury.pdf

Williams, M. (2003). Deforesting the Earth: From prehistory to global crisis. *University of Chicago Press*. ISBN: 0-226-89926-8.

Wright, T., Carlton, J. (2007). FSC's 'green' label for wood products gets growing pains. *Wall Street Journal*. B1. https://www.wsj.com/articles/SB119368082115675124

Appendix A: IRB

To: Tracy Petroske and Grace Wang
From: Stephanie Richey
Subject: Human Subjects Application
Date: 6/3/2022
Action Taken: Exemption Granted
Principal Investigator: Tracy Petroske
Faculty Advisor: Grace Wang
Project Title: Motivations of and Barriers to Forest Certification of Washington State Public Forest Trust Lands **Protocol Number:** 4721EX22

The Western Washington University (WWU) Institutional Review Board (IRB) designee determined that your project meets the requirements outlined in §45 CFR 46 and WWU institutional procedures to receive the following exemption determination:

Exempt Category 2

This determination means that your research is valid indefinitely, as long as the nature of the research activity remains the same. You may begin recruitment and data collection. After 6 years, according to the University's retention schedule, this exemption file will be deleted. After this point, you will no longer be able to make modifications to this protocol.

This exemption is given under the following conditions:

1. The research will be conducted only according to the protocol.
2. The research will be conducted in accordance with the ethical principles of Justice, Beneficence, and Respect for Persons, as described in the Belmont Report, as well as with federal regulations and University policy and procedure.
3. PIs, Faculty Advisors, PI Proxies, and any individual interacting or intervening with human subjects or their identifiable data must be appropriately trained in human research subject protections (CITI Basic Social/Behavioral Research – Basic/Refresher course), research methods, and responsible conduct of research **prior to** initiating research activity.
4. The Principal Investigator will retain documentation of all past and present personnel, including documentation of their training(s).
5. The Principal Investigator will ensure that all personnel training(s) remain(s) up to date.
6. IRB approval will be obtained **prior to making any modifications** that affect the research study's eligibility for this exemption category or fundamentally change the research. This includes changes to the Principal Investigator (PI), PI Proxy, or Faculty Advisor (if applicable), subject population, recruitment methods, compensation amounts or methods, consent

procedures or documents, or changes in study materials that deviate from the approved scope.

The following types of changes can be made without submitting a modification: Adding or removing research personnel other than the PI, PI Proxy, or Faculty Advisor (if applicable), edits in spelling, punctuation, and grammar on study materials (not including consent forms), minor wording changes to study materials (not including consent forms) that do not change the overall content and resulting comprehension, and adding or editing questions in questionnaires that are within the scope of the questions currently approved.

7. All research records (the application determination packet, correspondence with the IRB, any other IRB-related determinations, signed consent forms, and documentation of research personnel trainings in human research subject protections) will be maintained in accordance with WWU's guidelines for document retention.
8. The IRB will be promptly informed of any issues that arise during the conduct of the research, such as adverse events, unanticipated problems, protocol deviations, or any issue that may increase the risk to research participants.

Thank you for your attention to these details. If you have questions at any point, please review our website (www.wwu.edu/compliance) or contact a Research Compliance Officer.

Research Compliance Officer: Stephanie Richey
Exemption timestamp: 6/3/2022

Semi-Structured Interview Guide

Motivations of and Barriers to Forest Certification of Washington State Public Forest Trust Lands

Tracy Petroske, M.A. Candidate

Interview questions are intended to gather information to answer my thesis questions.

Thesis Questions (TQ) *(these are NOT directly asked, but are listed here for reference)*
1) What factors influence forest managers to seek certification?
2) If certification is desired, which one (SFI or FSC)? Why?
3) Does certification help (or hinder) achievement of management goals? How has certification impacted forest practices?
4) Is certification more (or less) prescriptive than legislation when regarding environmental or other considerations?
5) What barriers to certification exist in various regions? What causes those barriers?
6) What is needed to overcome barriers to preferred certification(s)?

Interview Questions *will include some of the following:*
TQ #1
In your region, who makes the decisions about forest certification (i.e., whether to certify, which one, etc.)?
What is your role/input with forest certification decisions?
In your region, is there any areas dual-certified with both SFI and FSC? If so, do you know (or can you approximate) the % of FSC-dual certified acreage? If so, is the dual-certified land contiguous or broken up into smaller parcels?
Do you know (or have a sense) why DNR chose to certify SFI? For FSC (if applicable)?
What is different about the land you manage compared to other DNR upland regions in Washington?
Do you have a sense for WHY DNR certifies forestland? How big a role is marketshare? Public opinion? Increase in timber value?
What are the other reasons that might compel certification (both for DNR and/or private industry)?
TQ #2, 3
In YOUR upland region, what is/are the primary objectives (e.g., yield, income, other)?
What do you see as the benefits and drawbacks of SFI? FSC?
In your opinion, does certification help (or hinder) achievement of management goals?
Are there elements of forest certification that you like? *Are these specific to your upland region or general?*
Are there elements of forest certification that you dislike? *Are these specific to your region or general?*
If the decision was all yours, would you certify the lands you are working on? If so, which (SFI or FSC)? Why?
How have management prescriptions and harvesting practices changed in your upland region during your time with DNR? (Also, if they have been involved with other upland regions).
What changed as a result of SFI certification? FSC?

How long have you been with DNR or other regional timber-management agencies? Related to this, have you worked in regions that were not certified? Related to this, were you "here" (at DNR) during the transition from non-certified to SFI, and then while adding FSC?
TQ #4
I often hear that Washington has the most rigorous and protective laws in the world. Do you think that's true? And if so, what laws and rules do we have that are different and/or better than other places?
Do you find that certification is more (or less) prescriptive than legislation with regard to environmental considerations?
Do you feel that certification advances any protections for jobs or other stakeholders?
What do you see as the differences between SFI and FSC, regarding: ▪ environment? ▪ jobs? ▪ other standards?
TQ #5, 6
Are there standards/processes/outcomes of certification you don't find to be malleable?
Could they be changed in the next cycle of certification? How flexible is the language in those requirements?
What do you see as barriers to certification: ▪ What keeps industry from liking/seeking it? ▪ What keeps industry from pursuing it?
Is there a means of removing those barriers? If so, what steps would need to happen?
FINAL Q
Is there anything else we should talk about today?

Recruitment Text

Motivations of and Barriers to Forest Certification of
Washington State Public Forest Trust Lands

Tracy Petroske

For use by email or by phone:

Dear XX,

My name is Tracy Petroske. I am a graduate student at Western Washington University, pursuing a Masters in Natural Resource Policy with an emphasis on forest management. My advisor is Dr. Grace Wang, Chair of the Urban & Environmental Planning & Policy department. My thesis will investigate two elements of forest certification of Washington DNR-managed forest trust lands. I hope to learn more about the factors which influence the decision to certify DNR upland regions under the Sustainable Forestry Initiative (SFI), Forest Stewardship Council (FSC), or both. Secondarily, I would like to identify barriers posed by the certification process and how they influence administrative decisions about certification. I hope this study will contribute to the broader picture of forest certification in the Pacific Northwest.

I hope to interview regional managers, foresters, and/or delegates from each of the six DNR-managed upland regions in Washington.

I am interested in hearing your perspectives and experiences. Would you be willing to engage with me in a one-hour-or-less discussion about these topics? We can use TEAMS, Zoom, or be in-person as you choose.

If you are willing to participate in this study, please let me know a date and timeframe that is convenient for you. I will then email you a consent form, which describes more about the research project and we can schedule a time to chat.

I look forward to hearing back from you!

Warm regards,
Tracy Petroske

Environmental Studies
Western Washington
University
petrost@wwu.edu
(425) 945-6455

Approved 6/3/2022 Western Washington University Consent Form

Research Project: Motivations of and Barriers to Forest Certification of Washington State Public Forest Trust Lands

Researchers:

Tracy Petroske, M.A. candidate, Western Washington University,
petrost@wwu.edu, 425-945-6455

Grace Wang, Professor, Chair of Urban & Environmental Planning & Policy,
Western Washington University, wangg@wwu.edu, 360-650-3278

We are asking you to be in a research study. Participation is voluntary. The purpose of this form is to give you the information you will need to help you decide whether to participate. Please read the form carefully. You may ask questions about anything that is not clear. When we have answered all your questions, you can decide if you want to be in the study or not. This process is called "informed consent."

You may print this form if you would like to retain a copy for your records. If you do not have access to a printer, we can mail you a copy of this form.

Purpose of the Study

The purpose of our study is to investigate two elements of forest certification of Washington DNR-managed forest trust lands. We seek to identify the factors which influence the decision to certify DNR upland regions under the Sustainable Forestry Initiative (SFI), Forest Stewardship Council (FSC), or both. Secondarily, we seek to identify barriers posed by the certification process and how they influence administrative decisions to pursue a "preferred" certification program.

We plan to share the results of this study with participants in the data-gathering process via a report and - if desired by DNR administration - presentation to DNR managers and board members. We hope this study will contribute to the broader picture of certifications in the Pacific Northwest for managers and owners of other regional working forest lands.

Study Procedures

The study involves the primary researcher (Tracy Petroske) interviewing individuals for one hour or less. Individuals might include upland regional managers, upland foresters, DNR employees responsible for certification processes, members of the Board of Natural Resources, or others as deemed appropriate and/or recommended by respondents. The interviews will be conducted via TEAMS or Zoom, or in some cases, take place in-person. With your permission, I will audio-record our conversation. If at any time you would like me to stop recording, I am happy to do so.

During the interview, if I ask any questions that you do not feel comfortable answering for any reason, you may choose not to respond. I will ask you to briefly discuss your experience at DNR

and/or other forest industries. I will also ask about your role in the certification process for your region or beyond. I am also interested in hearing your opinions on forest certification: both in general and as specifically applied to the region in which you work. And finally, I will be interested in hearing what barriers exist to forest certification in your region: for instance, what makes certification difficult or unwieldy to implement, and whether there are barriers that are intractable and prevent further certification if desired (i.e., dual certification with FSC and SFI).

Risks of Participation
I do not foresee any risks associated with your participation in this study.

Benefits
As an individual, you will receive no benefits to participation.

Compensation
You will not receive any compensation for participating in this interview process.

Data Security & Protections
Your name and contact information are only used to schedule your interview. At the conclusion of the research project, I will delete all scheduling emails.

Your data will not be used or distributed for future research.

Your data will be stored securely. Your interview will be audio recorded and transcribed. After removing any identifying information from the transcription, the audio file will be deleted. At that point, we will no longer know which transcription is yours."

We take every precaution to protect your information, though no guarantee of security can be absolute. We believe the chances of you being identified are low due to the protections in place for your privacy.

There are times where studies are reviewed by Western Washington University to make sure that they are being conducted safely. In the event that this occurs, the reviewers will be responsible for protecting your privacy.

Research-Related Injury
If you believe that you have been harmed due to participation in this study, please contact the researchers of the study.

Withdrawal
You are free to withdraw from this study at any time during the interview, without penalty or loss of benefits to which you are otherwise entitled.

If you withdraw from this study, I will promptly delete any recorded information.

Research Participant Rights

If you have concerns or questions about this research study, please contact Tracy Petroske ((425) 945-6455, petrost@wwu.edu). If you have questions about your rights as a research participant, contact the Western Washington University Office of Research and Sponsored Programs (RSP) at compliance@wwu.edu or (360) 650-2146.

Consent

Before we begin our interview, I will determine whether we have your consent by asking the following questions:

1) Have you had your questions answered?
2) Do you understand the tasks involved?
3) Are you 18 years old or older?
4) Do you agree to take part in this research?