

PROTECTING PUBLIC TRUST RESOURCES IN AMERICA'S PRIVATE
FORESTS: CASE STUDIES IN THE DIVERSITY OF U.S. STATE-LEVEL
FORESTRY POLICIES

By

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ABSTRACT

PROTECTING PUBLIC TRUST RESOURCES IN AMERICA'S PRIVATE FORESTS: CASE STUDIES IN THE DIVERSITY OF U.S. STATE-LEVEL FORESTRY POLICIES

Brita Ann Goldstein

Privately-owned forests in the U.S. provide ecological and socioeconomic benefits to Americans. At the same time, they challenge common law principles that govern the administration of public goods. There is long-standing tension between private property rights, which entitles forest landowners to make land management decisions about their properties, and the role of state governments in protecting public trust resources on behalf of the general public. Each state chooses to protect public trust resources on private lands in a different way, meaning the U.S. is a patchwork of diverse private forest policy approaches. Describing this range of approaches can help inform policy discussions. Researchers typically administer quantitative surveys to identify policy diversity, but few have utilized qualitative methods to characterize policy approaches to forest management on private lands.

This two-part study addresses this gap in literature by sampling the diversity of state-level forest policies present in the U.S. In Chapter 1, I use qualitative interviews with forestry policy experts to provide an in-depth look at different state forest policies across 12 case studies. In Chapter 2, I further explore the California case study to understand its highly regulatory forest policies from a landowner perspective. I

interviewed a group of California family forest landowners to understand how they perceive the state's balance between private property rights and public trust doctrine and how they navigate their regulatory policy environment to successfully achieve their forest management objectives. Examining this cross-section of U.S. forest policy diversity builds additional nuance into traditional frameworks (e.g., voluntary-to-regulatory framings), which allows for key comparisons between states and adds in-depth forest policy expert and landowner perspectives to the body of state-level forest policy literature.

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It was not easy to engage 46 total interview participants; I'd like to acknowledge those who helped me find them. I'm grateful to the leaders of the Forest Landowners of California and to my fellow working foresters who acquainted me with several private landowner participants to begin my snowball sampling. I especially appreciate my

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INTRODUCTION

Privately-owned forests account for 58% of the wooded landscape in the U.S., totaling more than 475 million acres (Oswalt et al., 2019), and hold significant ecological and socioeconomic values. Private forests produce a majority of commercial forest products to local, state, and national markets (Cubbage et al., 2007); provide cultural and nonmaterial benefits, like recreation, aesthetics, and spiritual enrichment (Schaaf & Broussard, 2006); and, sustain essential *ecosystem services*, or “the benefits people obtain from ecosystems,” such as oxygen production, fresh water filtration, nutrient cycling, carbon sequestration, and biodiversity (Leemans & Groot, 2003, p. 3). As Quartuch & Beckley (2013) stated, “the choices of thousands of individual parcel owners of forest land determine the fate of these ecosystems” (p. 437), meaning private forest landowners have considerable influence over the function and provision of these benefits to society. The care of these benefits is not guaranteed. Private forest landowner decisions can impact the quality and conservation of ecosystem services (Bliss, 2003; Ferranto et al., 2014; Haines et al., 2019; Kilgore & Snyder, 2016; Riitters et al., 2012; Schaaf & Broussard, 2006; Walker et al., 2003).

Private forest management is strongly influenced by a tradition of *private property rights* in the U.S. (Freyfogle, 2003), which vests control of land decisions with the individual; however, some resources on private lands are protected through government regulation by the *public trust doctrine* (Sax, 1970). The public trust doctrine is a long-standing concept in law that advocates for “legislative or regulatory limitations

on the use of private property [to]...protect the public interest in maintaining...a healthy environment" (Byrne, 2012, p. 915). The shared benefits of the environment, like ecosystem services, are known as *public trust resources* (Sagarin & Turnipseed, 2012). States may limit forest practices on private lands to better ensure protection of public trust resources, but such constraints can also conflict with the rights associated with private ownership. Each state has forest policies that reflect different private property rights and public trust doctrine priorities, which creates a widely varied landscape of policy approaches to forest management on private lands in the U.S.

This study explores the diversity of state-level forest systems in the U.S using two types of case studies. In Chapter 1, I use interviews with forest policy experts to provide an in-depth look at state policies across 12 distinct policy contexts. These comparative case studies revealed that—though they strived to protect public trust resources—most states generally emphasized the protection of private property rights equal to or more than the protection of public trust resources, affirming America's tradition of strong private property rights. These states relied mainly on voluntary policy instruments to protect public trust resources on private forests, but state government intervention is not the only way to constrain or guide forest practices on private lands.

In Chapter 2, I examine California as a notable outlier within the case study states. I develop an extreme case study to explore its highly regulatory approach to state-level forest policy. To further characterize California's forest policies, I interviewed 33 active family forest landowners about their experiences navigating this regulatory forest policy environment. Their experiences shed new light on the complexities and consequences of

regulatory forest policies and may provide perspective to other states and countries, especially those leaning toward more regulatory policy changes.

CHAPTER 1: CHARACTERIZING THE DIVERSITY OF STATE-LEVEL FORESTRY POLICIES IN THE U.S.

INTRODUCTION

Private forests in the U.S. are broadly regulated at the national level by federal statutes, such as the Clean Water Act; but, the states ultimately hold the power to choose how to implement and enforce federal requirements on state- and privately-owned lands. In many cases, these states implement their own state-specific regulations (Figure 1) (Ellefson, 2000). There are patterns to state-level private forest policies, with similar types of *policy instruments* that guide timber harvesting practices on private lands (Böcher, 2012; Cubbage et al., 2007; Serbruyns & Luyssaert, 2006). However, states display great diversity in how they protect public trust resources because of ecological, cultural, socioeconomic, and political complexities. In some states, sometimes referred to as “Home Rule” states, the state government allocates rulemaking power to local governments to create even more specific regulations at regional, district, county, or township levels. Combined, these federal, state, and local forest policies create the policy environment in which private forest landowners manage their land.

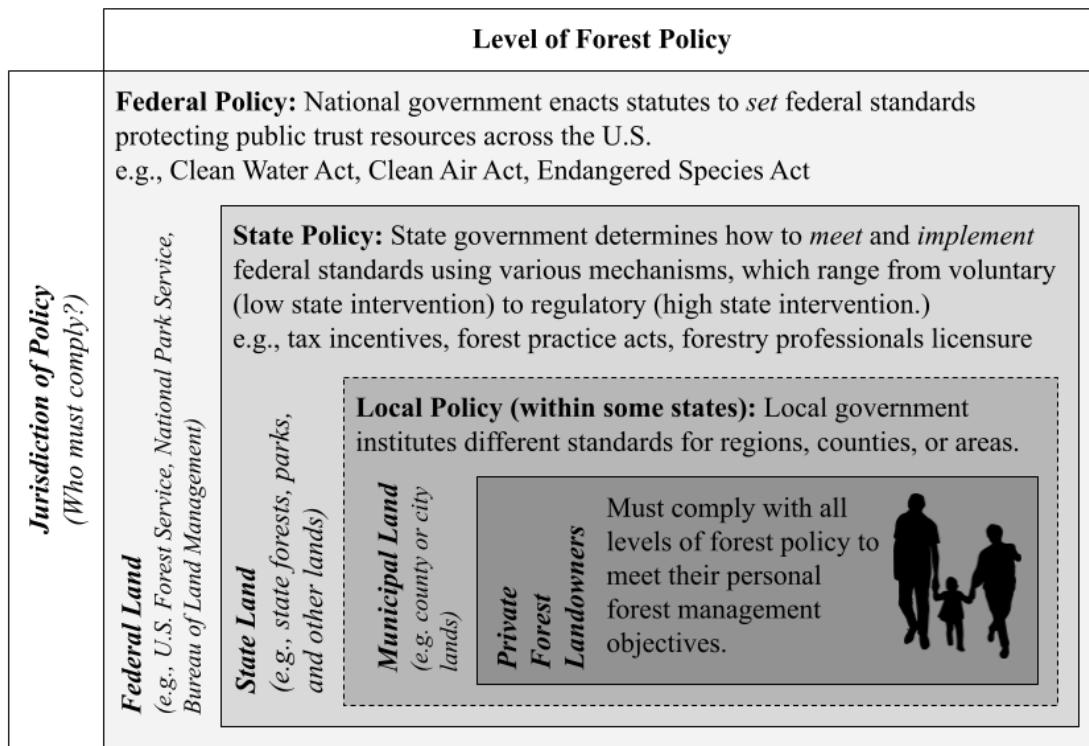


Figure 1. Structure of U.S. forest policy. This nested figure shows the different levels of forest policy (federal, state, and local) and the jurisdiction controlled by each level of policy to demonstrate the hierarchy of forestry regulation in the U.S. and the policy context in which private landowners operate.

Given the heterogeneity of state-level forestry policies in the U.S.—which includes some of the most and least regulated forests in the world (Mortimer, 2008)—it is difficult to assess the diversity of these policies. Best & Wayburn (2013) explain, “as private forests are not under federal regulation, and state forestry programs vary, there is no central depository of information about this huge expanse of our national landscape” (p. xxvii). Assessing nationwide diversity of U.S. state forest policies is challenging because it requires data collection in all 50 states and, as policies evolve over time, results remain relevant and accurate for a short time. That said, researchers such as

Ellefson et al. (2006), Kilgore & Blinn (2004), Cristan et al. (2018), and National Association of State Foresters (2019), have produced works evaluating the conditions of state forest policies, all of which rely on quantitative survey data and the traditional voluntary-to-regulatory framework (i.e., two- to four- category typologies classifying policy approaches based on level of state intervention) to compare states. These studies lack qualitative investigation needed to build more detailed characterizations of state policy environments. This study fills that gap by exploring: 1) how different states balance private property rights and public trust doctrine to build their policy systems; 2) the combinations of policy instruments states use to protect their public trust resources in private forests; and 3) who influences state-level forest policy discussions.

In this study, I utilized an in-depth, qualitative approach to investigate a range of forest policies present in the U.S. from the perspective of forest policy experts. Rather than conducting a comprehensive assessment of all 50 states, I used a quadrant typology developed by Kelly & Crandall (in press) to identify a subset of states with diverse private forest policy approaches. I conducted semi-structured interviews with 13 forest policy experts to develop 12 state case studies, each a snapshot of the state's forest policy system.

Case study states did indeed demonstrate a wide variety of approaches to forest policy on private lands, with most states striking a balance between private property rights or slightly favoring private property rights. Most states favored non-regulatory policy approaches with lower degrees of state intervention. These states relied on landowner knowledge and participation to protect public trust resources, a strategy that

some participants agreed fostered trust between the state and its private forest landowners. States also exhibited factors besides state-level intervention that impacted the use of forest practices on private lands, such as local laws, third-party independent certification, and landowner stewardship. Despite programmatic differences, most interviewees described similar casts of policy actors that inform and influence policy discussions and decisions, with private industry playing a primary role and other private landowners playing a secondary role.

This study does not serve as a comprehensive assessment of state-level forestry policies in all 50 states; rather, it examines and compares a purposive sample of states meant to represent a range of diversity found in the U.S. My open-ended questions allowed participants to guide the conversation to better capture narrative descriptions of the state policy environments and introduced new depth to existing quantitative assessments to paint a more comprehensive picture of state-level forest policy environments in the U.S.

1) Private Property Rights and the Public Trust Doctrine: The Underpinnings of U.S.

State-Level Forest Policy

The tension between private property rights and public trust doctrine in the U.S. has long been studied and engrained in literature and connected to the use of private forest resources (Quartuch & Beckley, 2013; Vonhof, 2001). The country's tradition of strong private property rights to land is as old as the country itself (Freyfogle, 2003). This tradition was perpetuated during westward settler-colonial expansion in the eighteenth

and nineteenth centuries and driven by the “homestead ethic,” in which (white) citizens were entitled to a piece of land and the use of its resources (e.g., water, soil, game, wood) unfettered by others (Vonhof, 2001, p. 126). When it came to forest resources, homesteaders—who often favored productive land for crops to shady forests—commonly converted their timberlands to other land uses (Vonhof, 2001).

Though this frontier ethic embedded private property rights in the land itself as a thing controlled absolutely by its owner (Anderson, 2006; Irimie & Essmann, 2009), Freyfogle (2006) asserts, “private property is a form of power over people, not land” (p. 12). Several researchers describe this perspective of private property rights as a *bundle of sticks* (Anderson, 2006; Quartuch & Beckley, 2014; Vonhof, 2001) with each stick representing a different right to a particular use of a particular space. These rights include the rights of people to access land, withdraw resources, manage or transform resources, sell or lease the land, and exclude others from land access and use (Schlager & Ostrom, 1992). Though private ownership may imply that all sticks in the bundle belong to the landowner, these sticks can be sold (e.g., through conservation easements) or may be restricted by other entities, including state governments. Vonhof (2001) refers to these as “duty-sticks,” or rights intended to protect public welfare from irresponsible or detrimental use by an individual (p. 53).

Though tradition in the U.S. seems to favor the rights of the individual, an individual’s rights may be constrained by the government for the protection of the common good, a concept known as the *public trust doctrine* (Sax, 1970). This concept predates the founding of the U.S. and initially applied only to navigable waters and

shellfish beds, resources viewed as more effectively or fairly controlled by the public trust than by individuals (Byrne, 2012). Over time, courts and scholars expanded the application of the public trust doctrine to include both public assets (e.g., open space, air, water) and the ecosystem services they provide (Sagarin & Turnipseed, 2012). To protect these public trust resources in private forests, state governments can intervene in or limit private forest landowners' rights, such as their rights of withdrawal (i.e., timber harvesting) and management (i.e., how they change their timber over time) (Bouriaud et al., 2013).

In U.S. private forests, the tension between private property rights and the public trust doctrine is described as a “balance” (Blumm, 2010, p. 2; Byrne, 2012, p. 925; Takacs, 2008, p. 718); a “trade-off” (Olive & McCune, 2017, p. 16); “competing needs” (Mortimer, 2008, p. 640); one “versus” the other (Ellefson, 2000, p. 15); and as a “seesaw” (Vonhof, 2001, p. 242). This implies that increased emphasis on one side means emphasis is taken away from the other, or a mutually exclusive relationship. States may prioritize private property rights and the public trust doctrine differently based on its unique social, cultural, economic, and ecological norms (Cubbage et al., 2007), and these values can evolve over time as these norms change (Irimie & Essmann, 2009).

In other words, states’ foundational values of private property rights and the public trust doctrine shape their role, or degree of intervention, in private forests. States build their policy approaches by selecting different policy instruments that reflect these values (Cubbage et al., 2007). Some instruments—such as technical assistance, cost-share programs, and tax incentives programs—emphasize private property rights and what

Ellefson (2000) refers to as the landowner's "personal responsibilities" on private lands (p. 15). Other instruments, mainly forest practice regulations, emphasize the public trust doctrine and the landowner's "imposed responsibilities" through state intervention on private lands (Ellefson, 2000, p. 15). As Kilgore & Blinn (2004) explained, "state...governments rarely rely on a single policy tool to accomplish society's interests in forestry. Instead, a mix of educational, technical assistance, financial incentives, and regulatory measures are routinely used" (p. 112). Most states employ a combination of different policy instruments, meaning their approaches to forest management on private lands can be complex and diverse.

2) Diversity of State Forestry Policies

Across the 50 states, there is a remarkable diversity of state forestry policies on private lands. Researchers study this landscape to better situate individual state policies within their national context, draw comparisons between state policies, and assess efficacy of certain policy tools or programs (Butler et al., 2014; Cristan et al., 2018; Ellefson et al., 2004; J. L. Greene et al., 2010; Kilgore et al., 2017, 2018; Kilgore & Blinn, 2004). In the past 20 years, four core studies in particular assessed and described state-level forestry policy diversity using three different classification systems, or typologies. A typology is "a set of ideal types that an observer can use as mental tools to simplify and organize a complex picture of reality" (Boon et al., 2004, p. 46). Reviewing these works chronologically shows how these typologies have become more complex over time to better define and distinguish different state forest policy systems.

Traditionally, the range of state-level forestry policy diversity has been described in literature using two broad categories: regulatory and non-regulatory (or voluntary) (Ellefson et al., 1995, 2004; Kilgore & Blinn, 2004). In this typology, a *regulatory state* is one that employs “a system of rules and directives established and enforced by [state] government authority” to ensure protection of public trust resources on private lands, demonstrating a high degree of state intervention on private forests (Ellefson et al., 2006, p. 402). A *non-regulatory state* is one that relies on voluntary measures to ensure protection of public trust resources on private lands, demonstrating a low degree of state intervention. In 2003, Ellefson et al. (2004) conducted a nationwide survey of administrators in state agencies to assess the extent of regulation of forest practices on private lands and the roles of state agencies and their programs. Although the research team published multiple studies using this survey data (Ellefson et al., 2004, 2005, 2006, 2007), their 2006 work specifically uses the traditional two-category approach to describe state forest policy diversity (Figure 2). Ellefson et al. (2006) identified 15 states as regulatory, mainly because they enacted Forest Practice Acts or similar legislation restricting forest practices on private lands, while 35 states were considered non-regulatory.

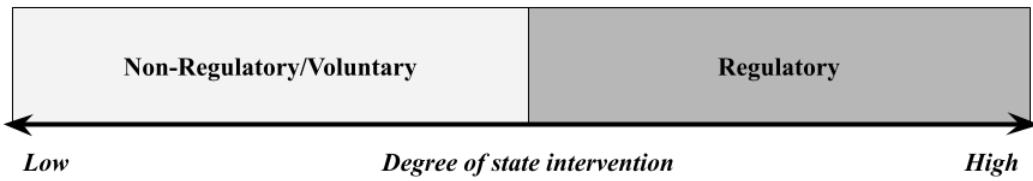


Figure 2. Two-Category State Forestry Policy Typology. This diagram is a visual representation of the two categories of state forestry policies described by Ellefson et al. (2006) and Kilgore & Blinn (2004).

In 2000, Kilgore & Blinn (2004) conducted a similar questionnaire survey of state forest agency leaders, yielding results from 45 U.S. states and six Canadian provinces. They specifically examined the types of policy tools used in each locale and their perceived efficacy by various audiences. They too used the two-category typology to summarize the general state and provinces' approaches to forest policy. Overall, 61% of states and provinces employed a voluntary (i.e., non-regulatory) system governing timber harvesting practices, favoring technical assistance and educational programming (Kilgore & Blinn, 2004, p. 124). In their discussion, Kilgore & Blinn (2004) noted the complexity found within state policy approaches and the limitations of using this two-category approach to represent these systems:

The distinction between a voluntary vs. regulatory policy framework can...be problematic. States...seldom rely exclusively on one approach or the other. More common is a forest management policy framework that incorporates a combination of regulatory and voluntary initiatives tailored to the type or sensitivity of a resource. (p. 113)

Thus, Kilgore & Blinn (2004) called for a more complex method of characterizing forest policy diversity.

Later studies introduced a third category to the typology, known as *quasi-regulatory states*, which share aspects of both voluntary and regulatory policies (Figure

3) (Cristan et al., 2016, 2018; National Association of State Foresters, 2019). Cristan et al. (2018) investigated the diversity of forestry Best Management Practices (BMPs) in all 50 states and defined quasi-regulatory BMPs as “non-regulatory yet water quality infractions result in citations” (p. 74). This is similar to Skjaerseth et al.’s (2006) concept of “soft law,” which refers to “norms that are deliberately non-binding in character but still have legal relevance” (p. 104). In their three-category typology, Cristan et al., (2018) separated the country into 20 non-regulatory states, 19 quasi-regulatory states, and 11 regulatory states.

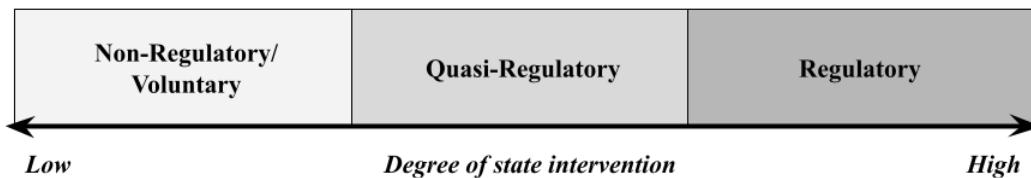


Figure 3. Three-Category State Forestry Policy Typology. This diagram is a visual representation of the three categories of state forestry policies described by Cristan et al. (2018).

The most recent study of private forest policies across the U.S. was conducted in 2019 by the National Association of State Foresters (NASF). Like Kilgore & Blinn (2004), NASF researchers used surveys to collect data from state foresters and their staff. They provided an alternative definition of quasi-regulatory: “state law establishes standards for water quality that silvicultural activities must meet but does not stipulate how the operator is to meet those standards” (National Association of State Foresters, 2019, p. 4), and introduced a fourth category into the typology: *states with some local government regulation* (Figure 4). These states are defined as “states that do not require

BMPs at the state-level but allow local governments to require them” (National Association of State Foresters, 2019, p.4). According to the NASF, the U.S. consists of 21 non-regulatory states, 5 states with some local government regulation, 11 quasi-regulatory states, and 13 regulatory states.

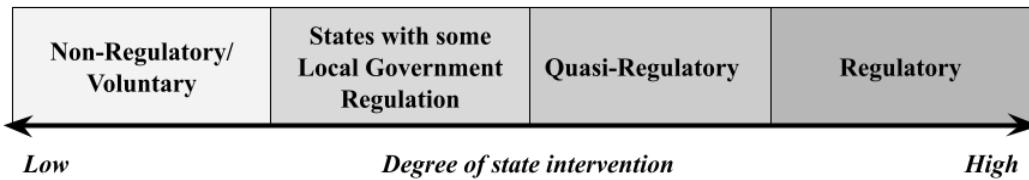


Figure 4. Four-Category State Forestry Policy Typology. This diagram is a visual representation of the four categories of state forestry policies described by the National Association of State Foresters (2019).

Viewing the findings of these four core studies all together shows the progression of the frameworks used to characterize diversity of state forest policies (Table 1). While the four-category typology provided different contrasts than the simpler typologies, it still leaves out important information needed to portray the full range of state policy approaches and values present in the U.S. Kilgore & Blinn (2004) specifically suggested further exploration of “how and by whom they [state forest policies] are administered and the synergies that are created when access is given to a wide variety of policy tools” (p. 125).

Table 1. Depictions of State-Level Forestry Policies by Study. This table shows a summary of the types of state forestry policy systems researchers observed. Note that Kilgore & Blinn's (2004) findings included only 45 U.S. states and an additional 6 Canadian provinces, so the numbers of states in each category is not directly comparable and marked as "NA."

Study	Non-Regulatory/ Voluntary	States with some Local Government Regulation	Quasi- Regulatory	Regulatory
Ellefson et al. (2006)	35 (70%)	-	-	15 (30%)
Kilgore and Blinn (2004)	NA (61%)	-	-	NA (39%)
Cristan et al. (2018)	20 (40%)	-	19 (38%)	11 (22%)
NASF (2019)	21 (42%)	5 (10%)	11 (22%)	13 (26%)

As demonstrated in these four core studies, researchers have relied on quantitative methods to assess and describe state-level forest policies, especially through structured surveys answered by state forestry agency leaders. While these studies provide key information, they lack depth and perspective needed to further describe the diversity of states' forest policies. Qualitative methods, like interviews, allow researchers to explore the nuances of policy instruments and capture details often left out of more structured surveys (Patton, 2002).

METHODS

My qualitative study utilized a case study approach to explore the diversity of state-level forestry policies across the U.S. The case study process includes “gather[ing] comprehensive, systematic, and in-depth information about each case of interest” (Patton, 2002, p. 447) then “weaving” this information into a narrative “to tell a story” or make a point (p. 450). Though each case study may stand alone, developing multiple comparative case studies can help researchers “discover contrasts, similarities, or patterns across the cases...[which] may in turn contribute to the development or the confirmation of...emergent themes and explanations” (“Comparative Case Study,” 2012). Researchers can also use case studies to demonstrate specific phenomena or examples within a larger dataset. Thus, I selected a subset of 12 diverse states to explore a cross-section of the diversity of state forest policies in the U.S. I conducted semi-structured interviews with 13 forest policy experts in these states to create 12 in-depth state case studies describing policies that influence forest practices on private lands. Coding analysis revealed cross-case trends and highlighted unique characteristics of certain states.

1) Selecting the Case Study States

I used Kelly and Crandall's (in press) four-category typology as a framework for sampling states. This typology, which depicts diversity of approaches to forest policy, consists of two axes forming four quadrants. As Kelly & Crandall (in press) explained:

The first axis expresses a continuum between an emphasis on protecting private property rights to safeguarding public trust resources. The second axis identifies the source of relevant authority (and, potentially, knowledge), from top-down (state administrations, legislation) to bottom-up (particularly maintaining individual landowner autonomy, including opt-in or incentive systems). (p. 24)

The four possible combinations established using these two axes form four categories of forest policies (i.e., Science-Bureaucracy, Expert Stewardship, Landowner Stewardship, and Participatory Conservation) and are summarized in Figure 5. States were initially categorized into the four types according to their employed forest policy instruments.

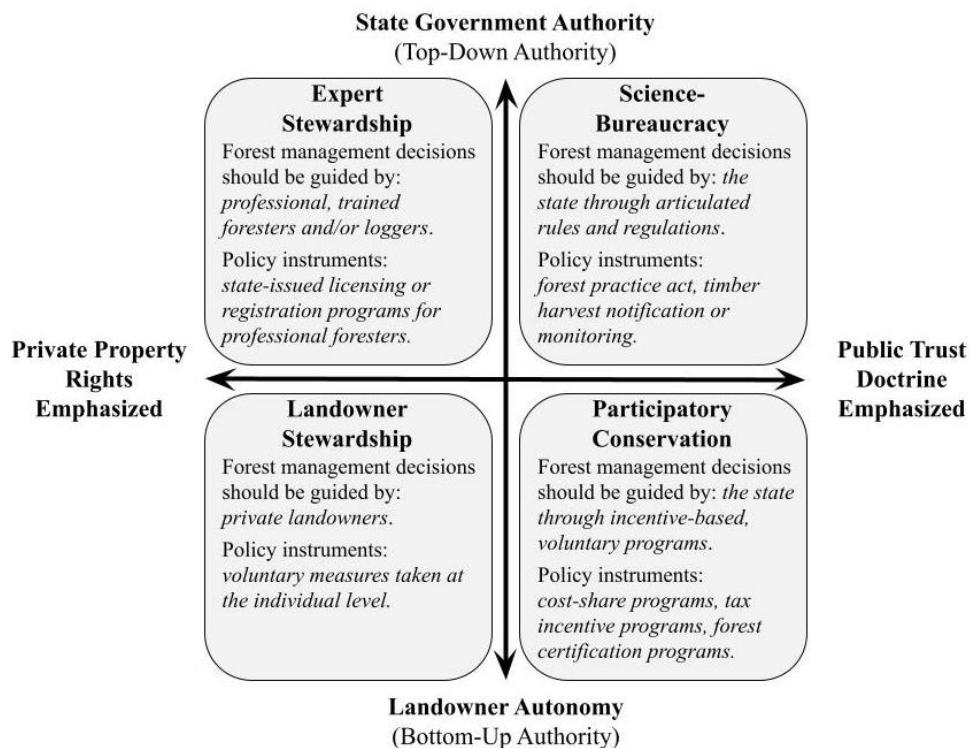


Figure 5. Kelly and Crandall's (in press) Quadrant Forestry Policy Typology. This figure shows four categories of forestry policy approaches based on two spectra: emphasis of private property right versus public trust doctrine and the use of top-down versus bottom-up authority or expertise to guide forest policies.

To capture as much diversity as possible, I selected three states from each category, yielding 12 states total. Within each category, I selected two states that closely matched the category criteria, intended to show nuanced similarities and differences, and one outlier state that possessed unusual characteristics within its category (Figure 6). I mainly targeted states with substantial forest product economies, defined as states where more than 2.01% of total forest land is cut or disturbed on average each year (Oswalt et al., 2019). The only exception was New Jersey with 1.0-2.0% forest land cut or disturbed annually. Geographic diversity was also considered when selecting states though not all regions of the country were represented, such as the Rocky Mountain region (Figure 7).

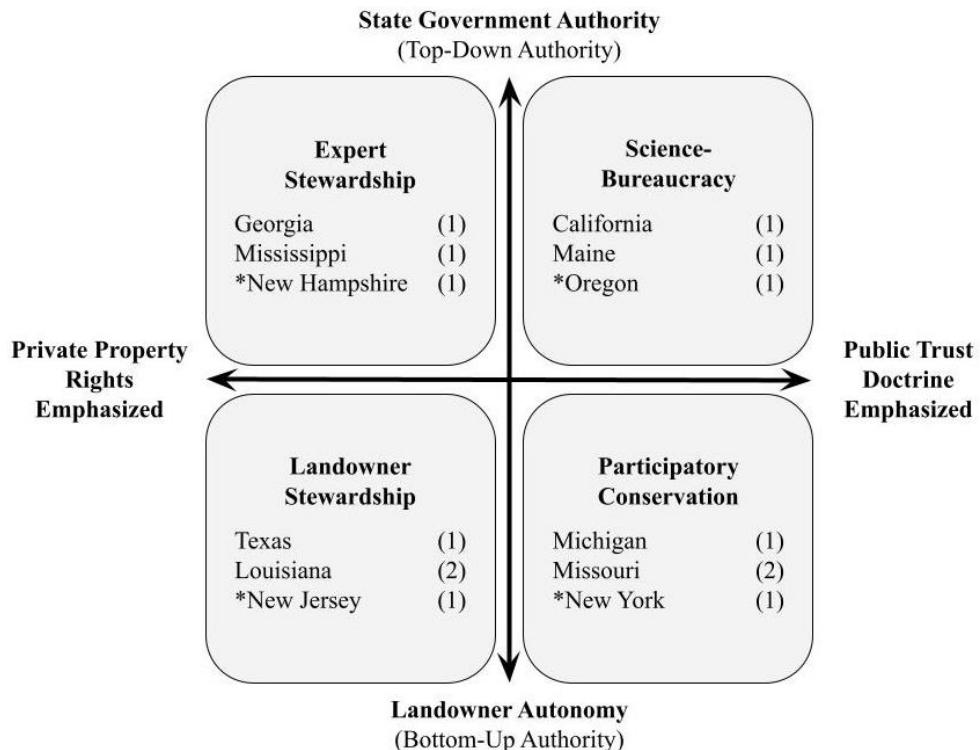


Figure 6. Case Study States. This diagram shows the case study states selected within each category of the quadrant typology. The asterisk () indicates an “outlier” state.*

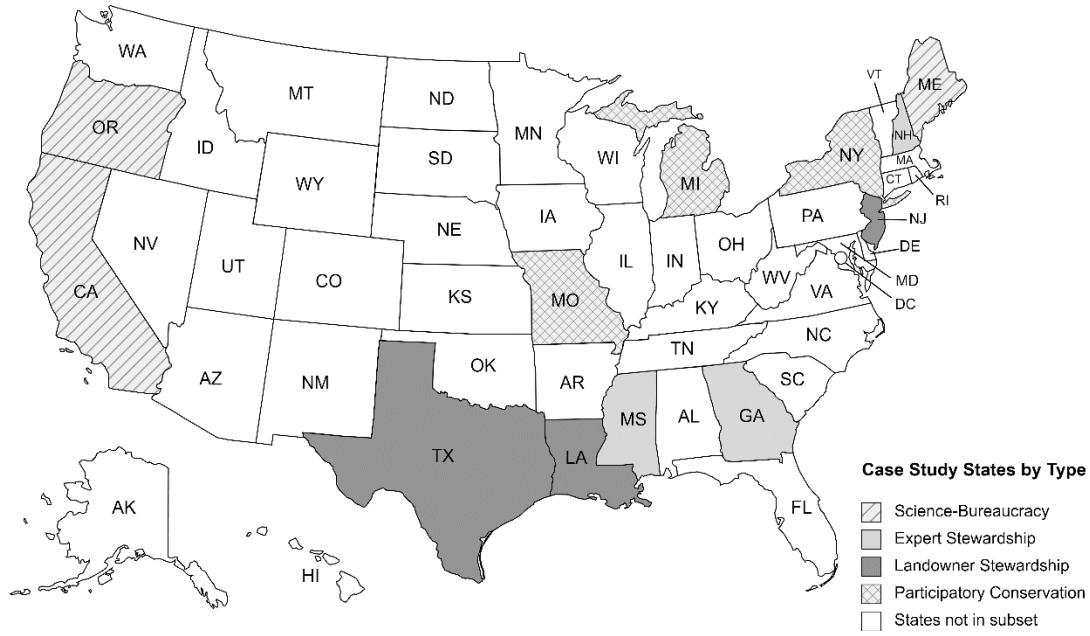


Figure 7. Map of Case Study States by Type. This diagram shows the geographic location of case study states and their respective categories within the quadrant typology.

2) Semi-Structured Interviews with State Forest Policy Experts

2.1) Interview Design and Participant Selection

I chose semi-structured, or standardized open-ended, interviews (Newing, 2010; Patton, 2002; Warren & Karner, 2015). This interview approach relies on an interview guide, or a set of predetermined questions asked during the interview, to “make interviewing a number of different people more systematic and comprehensive,” but

allows interviewees freedom to respond as they see fit (Patton, 2002). This degree of flexibility is especially important when interviewing experts from different states or countries with varied contexts (Brukas & Sallnäs, 2012; Jones, 1977; Sevä & Jagers, 2013). The interview guide consisted of 15 questions designed to help participants describe the state forest agency structure and functions; the state-level policy instruments that impact forest practices on private lands; policy changes within the past 20 years; and, key policy actors in policy discussions (Appendix A). Methods were approved by the Cal Poly Humboldt Institutional Review Board (IRB #19-095).

I chose to interview *forest policy experts*, or professionals with extensive forest policy experience (i.e., more than 10 years) and knowledge. Participants were selected using purposeful or theoretical sampling, which intentionally seeks participants in a particular group or with certain attributes to weigh in on certain topics (Emmel, 2013; Patton, 2002). I searched for experts with careers in the state forest agency, academia, private forestry consulting, or a combination therein, and mainly acquired contact information from affiliated websites. Though interviewing one expert in each state (or two in the case of Missouri) may seem limited, it allowed for deep exploration of state forest policies from an expert's perspective. Many interviewees were actively involved in their states' policy discussions. That said, their responses did not represent those of all policy experts in their respective states.

2.2) Participant Interviews

I conducted confidential, semi-structured interviews with 13 policy expert participants between March 2020 and July 2021. I contacted them initially via email

which included a description of the study, interview guide, and IRB-approved consent form stating researcher information, participant identity protection, risks and benefits, and the option for use of direct quotations. With participants residing across the country, I conducted and recorded all interviews using phone or Zoom calls. Interviews ranged from 50 to 100 minutes in length, with an average of 80 minutes. Each individual was assigned a unique code reflecting the state they represented and the identification number of the participant from that state (i.e., CA-1). Missouri was the only state with two identification codes (i.e., MO-1 and MO-2).

To keep identities ambiguous in the sometimes close-knit sector of forestry policy, participants were all referred to using the gender neutral pronoun “they” in this study, and I did not present any identifying characteristics or demographics. All consent forms and interview recordings were stored in a password-protected Google Drive accessible only to me and my advisor. Each interview was transcribed verbatim by Landmark Associates, Inc. in preparation for analysis.

3) Coding and Analysis

Even with the interview guide keeping participants focused on specific topics, my interviews yielded a plethora of results covering a wide variety of topics. To hone my analysis to my desired topics, I used *preconceived coding*, a type of grounded theory analysis that used a predetermined codebook to evaluate transcript data (Charmaz, 2014). This code book was based on topics, terms, and concepts associated with private property rights, protection of public trust resources, and other aspects of the four quadrant

typology categories. Using this set code book also allowed for more purposeful analysis, seeking the most relevant information among the large dataset.

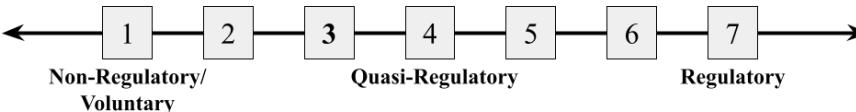
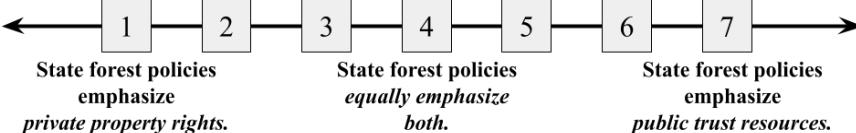
The coding process took several steps, beginning with an initial hardcopy review of the transcripts and handwritten observations, mostly reflecting the preconceived codes. Additional codes were added as needed. Then, each transcript was uploaded into a coding program called Dedoose and coded electronically and more thoroughly using the set codebook. I performed iterative coding to condense detailed codes into broader categories, a step known as second-level coding (York, 2020). Coding ceased when no new codes emerged, and all like codes were combined into distinct ideas. I used the coded data to build individual descriptions of each state's approach to forest policy. Comparing the code applications and frequencies across states also revealed themes and patterns used to draw conclusions (Charmaz, 2014).

RESULTS

This section presents results in three formats. First, I examine each case study state and its approach to forest policy on private lands individually using a *snapshot*, a table that presents key characteristics and information about the policy makers, administrators, instruments, and actors. States are listed together by type (i.e., Science-Bureaucracy, Expert Stewardship, Landowner Stewardship, and Participatory Conservation). Table 2 below provides a guide to understanding these state snapshots, defining terms and phrases. Each snapshot is followed by a *summary*, providing more detailed descriptions of the state's forest policies and values from the participants' perspective. Note that these results do not constitute comprehensive summaries of each state's forestry policies but rather highlight important and distinctive components of the policies according to interviewed experts. Finally, I examine all case study states together using two *scales* presented to participants during the interviews. One scale allowed participants to communicate their state's forest policies emphasis or valuation of private property rights versus public trust doctrine (i.e., the private-public scale) and the other allowed participants to communicate the states' degree of state-level intervention (i.e., the regulatory scale). These scales offer direct and visual comparisons between perceptions of states and their foundational values. This section concludes with a look at the policy actors, or *voices*, involved in policy discussions within case study states, showing the range of different actors present on the policy stages and similarities in their roles.

Table 2. Guide to State Snapshots. This table provides descriptions and references necessary to understand information displayed in the state snapshots.

Characteristic	Description
Participant ID Codes	Each participant was assigned an ID Code corresponding to the state they represent and the number of participants interviewed (e.g., CA-1). In most states, only one participant was interviewed, but Missouri included two participants (i.e., MO-1, MO-2).
“Quotations”	Unless otherwise specified, all quotations included in snapshots are taken directly from interviews with respective state forest policy experts.
Total Forested Acres	Total forested area in the state, including timberland, woodland, reserves, etc. Data sourced from Oswalt et al. (2019).
Percent Private Ownership	Percent of forested area in the state under private ownership (includes corporate and non-corporate ownerships). Data sourced from Oswalt et al. (2019).
Natl. Timber Output Rank	State’s national ranking in total annual timber output, or the annual “removal of live tree volume from the forest land base” in thousand cubic feet as reported by the U.S. Forest Service in 2016 (Oswalt et al., 2019). Removal includes “(1) harvested volume used for timber products, (2) logging residue (not used for a product), and (3) other removals arising from cultural treatments or land use change (sometimes used as a product)” and all tree species (softwoods and hardwoods.) So, the 1st state produces most output and 50th produces least output.
Primary Timber Product	Most commonly produced forest product in each state. See Appendix B for references.
Saw logs	Percentage of total roundwood products harvested and used for saw timber products. See Appendix B for references.
Other Forest Products	Percentage of total roundwood products harvested and used for veneer logs; pulpwood; composite products; fuelwood; posts, poles, and pilings; materials used for bioenergy; and other miscellaneous products. See Appendix B for references.
Forest Practice Act (Yr)	Does this state have a state statute mandating forest practice regulations on state and private forest lands? If so, the year that the most modern act was established is listed. Some statutes were a result of earlier forest practice laws; the dates of these earlier laws are not included in the snapshots. Note some statutes may not be titled “Forest Practice Act.”
Forester Licensing (Yr)	Does this state have a state-issued professional forest licensing program? If so, the year the program was established is listed.
Harvest Plan/Permit Rqd	Does this state require harvest plans to commercially harvest timber on state and private lands?
Harvest Notification Rqd	Does this state require harvest notifications to commercially harvest timber on state and private lands?

Characteristic	Description
Tax Incentive Program	Does the state administer a tax incentive program that offers monetary incentives (usually discounted tax rates) to eligible private forest landowners who implement certain forestry practices on their lands? Some states offer automatic preferential tax programs, but these were not considered “tax incentive programs” within this study. Program information taken from Greene et al. (2010) and various state forest agency websites.
Cost-Share Program(s)	Does the state administer a cost-share incentive program that rewards eligible private forest landowners for implementing certain forestry practices by reimbursing them for a portion of the costs? Program information taken from various state forest agency websites.
Perceived Degree of Regulation Demonstrated in State Forest Policies	<p>During the interviews, participants were asked the following question: “Researchers have described the states’ different approaches to forestry policy as ranging from <i>regulatory</i> (i.e., usually include state laws and administrative rules) to <i>non-regulatory/voluntary</i> (i.e., usually includes less extensive state authority over private lands and dependence on voluntary policy instruments) with several states falling somewhere in the middle (i.e., <i>quasi-regulatory</i>). With this in mind, how would you describe your state’s policy approach using the 1-7 scale below? Why have you chosen this number?”</p>  <p>Note that this scale was adapted from Cristan et al. (2018), but the term quasi-regulatory was left open to the participants’ interpretation rather than using Cristan et al.’s (2018) definition. The quotations below the scale in the snapshot show the participant’s explanation for their selection.</p>
Perceived Private-Public Emphasis in State Forest Policies	<p>During the interviews, participants were asked the following question: “How would you describe your state’s balance between protecting public trust resources (e.g., clean water, clean air, biodiversity) and respecting private property rights using the 1-7 scale below? Why have you chosen this number?”</p>  <p>This scale is adapted from the horizontal axis of Kelly and Crandall’s (in press) quadrant typology. The quotations below the scale in the snapshot show each participant’s explanation for their selection.</p>

1) Case Study State Snapshots and Summaries

State snapshots and summaries are presented by category and in the following order:

- Science-Bureaucracy: California, Oregon, Maine
- Expert Stewardship: Georgia, Mississippi, New Hampshire
- Landowner Stewardship: Texas, Louisiana, New Jersey
- Participatory Conservation: Michigan, Missouri, New York

California <i>(Science-Bureaucracy)</i>	"Its [the state's] highly regulatory process provides certainty to landowners, about what they need to do to be able to manage their land through the various suites of tools, and also certainty to the public about their role and expectations in resource protection." (CA-1)
Total Forested Acres 31,515,000	
Percent Private Ownership 39%	
Natl. Timber Output Rank 16th	
Primary Timber Product Softwood sawlogs	State Forestry Agency: <i>California Department of Forestry & Fire Protection (CAL FIRE)</i>
Saw Logs 82%	Primary Roles in Private Forests:
Other Forest Products 18%	<ol style="list-style-type: none"> 1) "Serves and safeguards the people and protects the property and resources of California" (California Department of Forest and Fire Protection, 2020, n.p.) 2) Timber Harvest Permit Review and Rule Enforcement – Leads multi-agency review and approval of commercial timber harvesting plans and enforces prescriptive forest practice regulations (i.e., California Forest Practice Rules).
Forest Practice Act (Yr) Yes (1973)	Who makes the policies and how? <i>California Board of Forestry and Fire Protection</i>
Forester Licensing (Yr) Yes (1972)	This governor-appointed body consists of nine members from the public, timber industry, and range industry. They revise the Forest Practices Rules annually and must "invite all...stakeholders" to weigh in on the proposed changes, including the public and other state agencies...like Calif. Dept. of Fish and Wildlife and Calif. State Water Resources Control Board" (CA-1). The legislature can also enact bills to change forest practices.
Harvest Plan/Permit Rqd. Yes	Who has a voice in policy discussions? "In most cases, policy isn't driven by a 'who' but a 'what.' The issues, and whoever brings them forward, drives change" (CA-1).
Harvest Notification Rqd. Yes	<ul style="list-style-type: none"> • Primary: Board of Forestry, guided by State Agency and informed by best science. • Secondary: Environmental NGOs, private industry representatives, professional forester organization, professional loggers organization, private landowner organization.
Tax Incentive Program(s) No	
Cost-Share Program(s) Yes	
Perceived Degree of Regulation in State Forest Policies	
"California most often addresses [forest management] issues through regulation...As you narrow down from broad scale...to specific harvesting permits, you get boxed into having less flexibility." (CA-1)	
Perceived Private-Public Emphasis in State Forest Policies	
"[Landowners] have the right to keep us off their property until they enter into an agreement [harvest permit] that allows us to go out there." (CA-1)	
"The public is fully engaged in...every project and process." (CA-1)	

Table 3. Snapshots of California's Approach to State Forest Policy.

1.1) California

California's interviewee characterized the state's approach to forest policy as "highly regulatory," as reflected in its extreme placement on the regulatory scale, and "complex" (Table 3). Though the state enacted forest practice laws in 1945, the Professional Foresters Law (enacted in 1972) and the Z'Berg-Nejedly Forest Practice Act (enacted in 1973) laid the foundation for California's current forest policy system. This system consists of a framework of prescriptive Forest Practice Rules, or "minimum operating standards," set by a multi-stakeholder, governor-appointed executive body (i.e., California Board of Forestry and Fire Protection, or BOF) and enforced by the state forestry agency (i.e., California Department of Forestry and Fire Protection, known as CAL FIRE) (CA-1).

The commercial harvesting process is centralized around the Timber Harvest Plan (THP) and other state-issued harvesting permits, most of which involve extensive ecological and operational information about the proposed project and can only be prepared by a state-licensed Registered Professional Forester (CA-1). Obtaining this license requires seven years of educational and working experience in forestry, multiple character and professional references, as well as a passing score on the state examination. Permits undergo a rigorous multi-agency harvest plan review, which includes document review, multiple onsite inspections, and a public comment period. Review entities can include, but are not limited to, CAL FIRE, California Department of Fish and Wildlife, California Geological Survey, California State Water Resources Control Board, and nearby Native American tribes (CA-1). The review process spans approximately 65 days

from plan filing to plan approval (California Department of Forest and Fire Protection, 2020). Only licensed operators (i.e., Licensed Timber Operators) may implement the harvesting practices. Obtaining this license requires a two-day state-administered training course, at least 3,000 hours of work experience, and proof of insurance.

According to CA-1, strong concern for the protection of public trust resources has pushed California to use regulation as its primary policy instrument, which ultimately provides certainty to both private landowners participating in active forest management as well as the public (Table 3). CA-1 noted that the state usually responds to new publicly voiced concerns by introducing new regulations, generally every year, meaning regulations are modified over time, often becoming more complex. They indicated that regulatory complexity had a limit; however, “we don’t want to constrain the landowner to such a point that they don’t manage their land at all. We want to find opportunities and adjust the regulations to encourage people to manage their land” (CA-1). As the system grows more complex, landowners’ confusion or frustration may disincentivize their participation. The interviewee wondered at what point the highly regulated system might actually hinder its objectives to protect public trust resources.

CA-1 noted that the “public plays a critical role” in regulating private forests, which shows emphasis on public trust doctrine. Both the BOF’s actions and private landowner’s harvesting permits are subject to public comment. CAL FIRE also publishes all documents involved in the timber harvest review process which “provides transparency” and proof that the agency is fulfilling its duties to protect public trust resources (CA-1).

<p>Oregon (Science-Bureaucracy)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Total Forested Acres</td><td style="padding: 5px;">29,653,000</td></tr> <tr> <td style="padding: 5px;">Percent Private Ownership</td><td style="padding: 5px;">36%</td></tr> <tr> <td colspan="2" style="padding: 5px;">Natl. Timber Output Rank</td></tr> <tr> <td colspan="2" style="padding: 5px;">Primary Timber Product</td></tr> </table>	Total Forested Acres	29,653,000	Percent Private Ownership	36%	Natl. Timber Output Rank		Primary Timber Product		<p>“On the regulatory side of things, Oregon has statutes and rules based around forestry activities that can and cannot happen around watercourses. Buffering is the big one...[but] landowners have a pretty wide margin to do quite a bit [i.e., make decisions.]” (OR-1)</p> <p>State Forestry Agency: Oregon Department of Forestry (ODF)</p> <p>Primary Roles in Private Forests:</p> <ol style="list-style-type: none"> 1) Fire Protection – responsible for protection of private and some public lands. 2) Forest Practice Administrative Rules – revise forest practice regulations to support amendments to Forest Practice Act and provide guidance on policy implementation. 3) Landowner Assistance – “stewardship foresters...help private forest landowners manage their lands through technical assistance, financial incentives, education, and regulation” (Oregon Department of Forestry, 2022). <p>Who makes the policies and how? Oregon Legislature & Oregon Board of Forestry</p> <p>The state legislature periodically introduces bills to propose changes to the Forest Practice Act. These policy changes are then adopted by the Oregon Board of Forestry, a governor-appointed body consisting of seven geographically and professionally diverse citizen members. Finally, the Oregon Department of Forestry revises the Forest Practice Administrative Rules to support and promulgate the new changes (OR-1).</p> <p>Who has a voice in policy discussions? “You have two equally powerful groups...industry on one side and conservation on the other. Both throw a lot of weight around” (OR-1).</p> <ul style="list-style-type: none"> • Primary: Private industry and “conservation community” (i.e., environmental NGOs) • Secondary: private landowner organizations, local conservation districts and councils
Total Forested Acres	29,653,000								
Percent Private Ownership	36%								
Natl. Timber Output Rank									
Primary Timber Product									
<p>Perceived Degree of Regulation in State Forest Policies</p>	<p>Perceived Private-Public Emphasis in State Forest Policies</p>								
<p>“It’s on the non-regulatory side...the notifications aren’t permits. You don’t need to get a permit from the ODF to harvest.” (OR-1)</p> <p>“[Agency] guidance drive[s]—not necessarily policy change—but on-the-ground action.” (OR-1)</p>	<p>“The ODF...[can’t] go on private property without permission; so, if a violation occurs, and nobody sees it, then it’s not reported.” (OR-1)</p> <p>“[On] Forest Practice [Act] regulated lands...you can see much better water quality and much better fish and wildlife habitat.” (OR-1)</p>								

Table 4. Snapshot of Oregon's Approach to State Forest Policy.

1.2) Oregon

Oregon demonstrates a regulatory system with some forest practice standards but also provides wide latitude for private forest landowners to make forest management decisions. In 1971, Oregon enacted its Forest Practice Act, “setting standards for building and maintaining roads, harvesting, applying pesticides, and replacing harvested trees” (Oregon Department of Forestry, 2020). This set the stage for the state’s current forest policy system, in which the state legislature periodically amends the Act, then the changes are approved by the Board of Forestry and put into practice by the Oregon Department of Forestry (ODF) using the Forest Practice Administrative Rules.

Commercial timber harvesting on private lands requires a notification to the agency submitted by the landowner, forester, or operator; it is then reviewed by ODF and made available to the public (OR-1). Oregon does not offer a state-run cost-share program. Though it offers an automatic preferential tax program for forest landowners, it does not offer a tax incentive program either. Rather, landowners utilize federal cost-share programs and other funding sources to seek supplemental funding for forest management activities. State agency foresters provide technical assistance for those programs.

Despite the statutory framework, OR-1 contended that its policy system is actually quite “non-regulatory,” which was supported by their quasi-regulatory placement on the regulatory scale (Table 4). For example, the agency does not require permits or licensed forestry professionals. Also, without formal harvest inspections, the agency relies on neighbors and self-reporting for rule enforcement.

Interestingly, Oregon is currently in the midst of major policy change. In 2019, timber industry and conservation representatives “planned a series of competing ballot measures” (Parks, 2021, n.p.) which “followed on the heels of decades of fierce debate between the forest products sector and the conservation and fishing community about how to adequately manage privately owned forestlands” (Audubon Society of Portland et al., 2022, p. 3). To avoid a costly political conflict, 26 forest sector companies and conservation organizations signed a Memorandum of Understanding (MOU) on February 10, 2020 to develop a “plan to boost protections for vulnerable fish and wildlife while shielding the timber industry’s ability to log” (Parks, 2021, n.p.). Negotiations finally concluded on October 30, 2021 (shortly after I conducted my interviews), and the resulting agreements, known as the Private Forest Accord, were presented to the Oregon Legislature, Oregon Governor Kate Brown, and the Oregon Board of Forestry on February 2, 2022” (as I finished writing this thesis document) (Audubon Society of Portland et al., 2022, p. 3). This Accord is a landmark event demonstrating bottom-up policy change, initiated by policy participants rather than policy makers, as well as the dynamic nature of forest policies.

Maine <i>(Science-Bureaucracy)</i>	<p>“State laws regulate forest practices, and towns can enact forestry ordinances to regulate [further]...but, there are also practices that are voluntary that have regulatory teeth behind them...You can’t put mud in the brook, but how you do it is up to you.” (ME-1)</p>
Total Forested Acres	17,579,000
Percent Private Ownership	91%
Natl. Timber Output Rank	14th
Primary Timber Product	Hardwood pulpwood
Saw Logs	33%
Other Forest Products	67%
Forest Practice Act (Yr)	Yes (1989)
Forester Licensing (Yr)	Yes (1975)
Harvest Plan/Permit Rqd	No
Harvest Notification Rqd	Yes
Tax Incentive Program(s)	Yes
Cost-Share Program(s)	Yes
<p>Perceived Degree of Regulation in State Forest Policies</p> <p>← 1 — 2 — 3 — 4 — 5 — 6 — 7 →</p> <p>Non-Regulatory/ Voluntary</p> <p>Quasi-Regulatory</p> <p>Regulatory</p>	
<p>Perceived Private-Public Emphasis in State Forest Policies</p> <p>← 1 — 2 — 3 — 4 — 5 — 6 — 7 →</p> <p>State forest policies emphasize private property rights.</p> <p>State forest policies equally emphasize both.</p> <p>State forest policies emphasize public trust resources.</p>	
<p>“Maine’s water quality BMPs are considered voluntary [but] the outcome is not voluntary...it’s not very prescriptive in a lot of our practices.” (ME-1)</p>	

Table 5. Snapshot of Maine's Approach to State Forest Policies.

1.3) Maine

Like California and Oregon, Maine's approach to forest policy is nominally a regulatory framework based on its Forest Practice Act (enacted in 1989) and Forestry Rules of Maine (Maine Department of Agriculture, Conservation & Forestry, 2021); however, Maine uses several other policy instruments to protect public trust resources. ME-1 summarized this structure:

The Forest Practices Act...basically regulates clear-cut size, arrangement, and regeneration...and require[s] that Maine Forest Service [state forestry agency] be notified about all timber harvesting...People call it a permit, but it's a notification, letting the state regulatory folks know that a harvest is occurring, so they can come and check up on environmental law compliance.

These state rules are further complicated by Maine's local laws, which play a critical role in forestry regulation. As a "Home Rule" state, one that allocates some autonomy to local governments, Maine decentralizes much of its authority to town governments which "can enact forestry ordinances to [further] regulate forestry" in certain areas (ME-1). These localized variations make forest regulation in Maine "a little bit of a patchwork" (ME-1). Maine's interviewee noted that, "I've actually got wood lots that span town boundaries, and I've got one set of rules on half the wood lot and one set of rules on the other half of the wood lot." They also mentioned that Maine is slowly moving toward centralizing and simplifying its forest regulations by encouraging townships to adopt "statewide standards for timber harvesting" (ME-1).

Maine also administers a professional forester licensing program, yet "there's no requirement [for landowners] to work with a forester" to harvest timber (ME-1). In fact,

only “twenty-five to thirty percent of [submitted] notifications...have a forester on them...You need a license to practice forestry in Maine. You do not need a license to cut wood. Sometimes the distinction gets a little bit gray” (ME-1). That said, landowners must work with a licensed forester in order to enroll in the Tree Growth Tax incentive program, which “provides for the valuation of land based on its current use as forest land, rather than its highest and best use” (Maine Revenue Services, 2021). “The penalties [for exiting the program] can be big,” so once landowners commit to certain forest practices, they are disincentivized from deviating (ME-1). They must also work with a licensed forester to enroll in the state’s cost-share program, known as Woods Wise Incentives to Stewardship Enhancement (i.e., Woods WISE) (Maine Department of Agriculture, Conservation & Forestry, 2021). ME-1 added that the state’s cost-share programs are less commonly utilized than federal programs offered by the Natural Resource Conservation Service and U.S. Forest Service.

Overall, ME-1 considered Maine’s approach to state forest policies as quasi-regulatory and struck an even balance between the protection of private property rights and public trust resources (Table 5). ME-1 noted that together Maine’s variety of policy instruments offer landowners choice in developing appropriate forest practices for their properties while also ensuring a standard level of protection of resources.

Table 6. Snapshot of Georgia's Approach to State Forest Policies.

1.4) Georgia

Georgia has a long history of forest policy, dating back to the enactment of its first forest practice laws in 1921 (Georgia Forestry Commission, 2019). These laws, known as the Georgia Forestry Laws, were rewritten in 1955 and created the backbone of today's forest practices (Georgia Forestry Commission, 2021). These laws focused mainly on administrative structure, describing the authorities of the Georgia Forestry Commission (GFC) and the State Board of Registration for Foresters, rather than prescriptive forest practice regulations; hence, GA-1's non-regulatory description of the state's policy approach (Table 6). GA-1 claimed that voluntary BMPs are the most important part of state forest policies on private forests, allowing landowners to meet these standards in their own way but with rules in place to penalize non-compliance.

The state's registered forester licensing program is also long-standing, beginning in 1951, and was one of the first programs of its kind in the U.S (Georgia Secretary of State, 2018). Like Maine, only registered foresters are permitted to practice professional forestry, but landowners are not required by law to consult with one in order to harvest timber. GA-1 noted that though the GFC provides landowner forest management services, it generally recommends consultation with a registered forester.

As a state, Georgia does not require harvest notifications or permits; however, its status as a Home Rule state allows counties to establish local forestry laws. GA-1 noted that one of the most recent policy changes has been the introduction of an online timber harvest notification submission and database website hosted by the GFC, which offers transparency about timber operations to the public. GA-1 also mentioned that the number

of counties that continue to develop specific notification requirements are impacting operators: if “counties [are] overly restrictive on the operators,” then they are more likely to say, “it’s not worth my time to operate in that county, so I’ll go somewhere else” (GA-1).

Georgia has three tax programs associated with forestlands, but only the Qualified Timberland Property (QTP), introduced in 2020, truly incentivizes certain forest practices on private lands (Georgia Forestry Commission, 2022). To receive property tax reductions, eligible landowners must prepare a forest management plan and renew their enrollment each year. This incentivizes landowners to “actively grow and manage timber” (GA-1).

GA-1 emphasized that the strong presence of third-party certified mills, mostly certified with the Sustainable Forestry Initiative (SFI), also provides for protection of public trust resources as they require timber sellers to meet specific conservation standards. For example, SFI certified mills in Georgia will only purchase timber harvested by a master logger who has completed the Georgia Master Timber Harvest Program, a certification program offered through the University of Georgia in cooperation with both public agencies and private organizations (Georgia Master Timber Harvester Program, 2017). These loggers are then monitored over time for their performance and graded on their compliance with SFI’s operational and environmental standards. GA-1 described this requirement as “a success story” in self-regulation for the industry.

Mississippi <i>(Expert Stewardship)</i>	"It's not really a big regulatory [state]...It's focused on landowner rights...If a landowner wants to sell timber here, there's no hoops they would have to jump through, [like] applying for permits...The state tries to steer 'em toward hiring a professional forester to look out for their best interest [but] it's strictly up to them." (MS-1)
Total Forested Acres 19,380,000	
Percent Private Ownership 89%	
Natl. Timber Output Rank 4th	
Primary Timber Product Softwood pulpwood	State Forestry Agency: Mississippi Forestry Commission
Saw Logs 39%	Primary Roles in Private Forests:
Other Forest Products 61%	1) Landowner Services & Education – "area foresters" provide advice for private landowner (but do not administer private timber sales), assistance with invasive species, education opportunities, and public outreach (Mississippi Forestry Commission, 2022a).
Forest Practice Act (Yr) No (repealed in 2017)	2) Cost-Share & Technical Assistance Programs – administer Forest Resource Development Program (funded by the state's timber sale severance tax).
Forester Licensing (Yr) Yes (1977)	3) "It's not a regulatory agency. It's a service agency" (MS-1).
Harvest Plan/Permit Rqd No	Who makes the policies and how? Mississippi Forestry Commission & Others
Harvest Notification Rqd No	Mississippi's forest policies center around voluntary BMPs, which are revised periodically by "individuals representing a cross section of the forestry community, working through the Environmental Affairs and Wildlife Committee of the Mississippi Forestry Association" (Mississippi Forestry Commission & Mississippi Forestry Association, 2008).
Tax Incentive Program(s) Yes	Who has a voice in policy discussions?
Cost-Share Program(s) Yes	<ul style="list-style-type: none"> Primary: Private forestry association (i.e., private industry, foresters, landowners, forestry agency representatives, non-forestry agency representatives), logger organization Secondary: State agency leaders, university extension
<p>Perceived Degree of Regulation in State Forest Policies</p> <p>← 1 1.5 2 → 3 → 4 → 5 → 6 → 7 →</p> <p style="text-align: center;">Quasi-Regulatory</p> <p style="text-align: center;">Regulatory</p>	
<p>Perceived Private-Public Emphasis in State Forest Policies</p> <p>← 1 → 2 → 3 → 4 → 5 → 6 → 7 →</p> <p style="text-align: center;">State forest policies emphasize private property rights.</p> <p style="text-align: center;">State forest policies equally emphasize both.</p> <p style="text-align: center;">State forest policies emphasize public trust resources.</p>	
<p>"They [landowners] don't have to apply to be able to cut their own timber or hire a forester...[also] BMPs are voluntary up to a certain point where they're not impeding or damaging the flows of Mississippi water." (MS-1)</p> <p>"We are in a good balance here...most of the time, it's up to the landowner how [they] want to manage [their] property...I think they do a good job...[in] Mississippi, you'll see we have healthy forests." (MS-1)</p>	

Table 7. Snapshot of Mississippi's Approach to State Forest Policies.

1.5) Mississippi

In Mississippi, state forestry policies focus mainly on non-regulatory instruments; however (Table 7), the state distinguishes the practice of professional forestry through professional forester licensure. The state passed the Foresters Registration Law in 1977 (amended in 1989) to create the Mississippi Board of Registration for Foresters (BORF) (Mississippi Board of Registration for Foresters, 2021). MS-1 explained that the state does not require landowners to consult with licensed foresters when harvesting timber, but the Mississippi Forestry Commission (MFC), the state's forestry agency, encourages them to seek out professional expertise when possible. They also noted that Mississippi "is seeing more people using registered foresters than... in the past. I think that's due in part to education and showing people...[that] foresters...look out for [your] best interests." Registered foresters are, however, required to write reforestation plans necessary to enroll landowners in the Mississippi Reforestation Tax Credit program, an "income tax credit up to 50% of the cost of approved hardwood and pine reforestation practices"(Mississippi Forestry Commission, 2022b).

Mississippi uses voluntary BMPs to broadly guide landowner timber harvesting practices; yet, noncompliance can result in legal consequences (Mississippi Forestry Commission & Mississippi Forestry Association, 2008). The MFC's involvement in the BMPs includes publishing the BMP handbook and performing routine BMP compliance monitoring at project sites. All enforcement duties, however, belong to the Department of Environmental Protection. The private sector also helps develop the BMPs, mostly through the Mississippi Forestry Association (MFA), a "non-profit organization...leading

diverse groups to promote landowner rights, environmental stewardship, member prosperity, and community understanding” (Mississippi Forestry Association, 2022, n.p.) and is made up of mostly “landowners, foresters, and timber industry [representatives]” (MS-1). The MFA hosts and coordinates the working group of private and public forestry representatives responsible for BMP revisions.

Like Georgia, MS-1 recognized the important role that SFI certification plays in the protection of public trust resources in Mississippi. According to MS-1, most mills and private timber companies are SFI certified and maintain SFI’s forest practice standards. The MFA hosts the Mississippi SFI State Implementation Committee, which “receive[s], respond[s] to, and follow[s] up on any complaints” regarding SFI practices and state BMPs (Mississippi Forestry Association, 2022, n.p.). Like the BMP working group, this committee includes public and private sector representatives. Additionally, the state offers a Professional Logging Manager Program through the Mississippi State University Extension Service, which “is centered on SFI practices” and standards (Mississippi State University Extension Service, 2022, n.p.). This certification is not required by the state; however, “many of the loggers here—maybe 95 percent—go through the logger certification program” because of the strong prevalence of SFI certified businesses (MS-1).

New Hampshire <i>(Expert Stewardship)</i>		"In New Hampshire, we use the phrase...‘voluntary regulations.’ They’re not regulatory. You choose to use them, but if you don’t use them, and something bad happens, then that’s when fines can kick in and actions can be taken." (NH-1)
Total Forested Acres	4,758,000	
Percent Private Ownership	73%	
Natl. Timber Output Rank	29th	
Primary Timber Product	Softwood saw logs	State Forestry Agency: New Hampshire Division of Forests and Lands (NHDFL) and University of New Hampshire Cooperative Extension (UNHCE)
Saw Logs	49%	Primary Roles in Private Forests:
Other Forest Products	51%	1) NHDFL – Forest Protection [“forest rangers” respond to wildfire and enforce timber harvest practice laws (NH-1).]
Forest Practice Act (Yr)	Yes (1949; 1971)	2) UNHCE – Landowner Assistance and Education (property consultations and professional development for foresters, loggers, wetland scientists, forest industry professionals) (University of New Hampshire Extension, 2022).
Forester Licensing (Yr)	Yes (1990)	Who makes the policies and how? New Hampshire Legislature and NHDFL
Harvest Plan/Permit Rqd	No	Regulatory changes are made within New Hampshire’s legislature, which may amend the Forestry Act and other state laws relevant to timber harvesting. Changes to the voluntary BMPs are made by the BMP Revision Committee hosted by the NHDFL and UHNCE.
Harvest Notification Rqd	Notice of Intent to Cut	Who has a voice in policy discussions?
Tax Incentive Program(s)	Yes	<ul style="list-style-type: none"> Primary: Landowner organization and statewide land trust [“Both organizations have been in existence for over 100 years...and have been heavy hitters in...forestry policy. It’s those two that really have shaped what we have today...They both have different perspectives, but they often agree on what should be policy and what shouldn’t” (NH-1)]. Secondary: NHDFL, environmental NGOs/activists
Cost-Share Program(s)	Yes	
Perceived Degree of Regulation in State Forest Policies		Perceived Private-Public Emphasis in State Forest Policies
<p>“It’s really what the landowner wants to do within the bounds of our limited forest policy...There’s bumpers on some things, but there’s a lot of room in between. I think the laws that do exist are very clear.” (NH-1)</p>		<p>“So far, foresters, loggers, and landowners are able to do what they want to do on their properties [and] we haven’t had catastrophic damage to water resources...[or] wildlife populations. So, we have that trust from the public, that social license, to [keep] our privileges.” (NH-1)</p>

Table 8. Snapshot of New Hampshire’s Approach to State Forest Policies.

1.6) New Hampshire

Although NH-1 described New Hampshire as largely “voluntary,” its approach to state forest policy includes both regulatory and non-regulatory policy instruments (Table 8). The state has two major bodies of law that impact private forest management. The first outlines “current use assessment, how forestland is taxed,” (NH-1) and requires harvesting landowners to submit a “Notice of Intent to Cut” to local and state officials, including tax agencies (Smith & Anderson, 2014). This form essentially serves as both a permit and a notification and must be posted at the project site. The second set of laws, first enacted in 1949 and amended in 1971, “is what one would probably consider more as a forest protection act [known as] RSA 227-J” and includes “different timber harvesting laws [like] slash rules” (NH-1).

Unlike most state forestry agencies in the U.S., New Hampshire’s lead forestry agency is a “unique hybrid” of the NHDFL and the University of New Hampshire Cooperative Extension (UNHCE) (NH-1). The two possess a Memorandum of Understanding (MOU) that grants all private landowner assistance duties to the UNHCE but grants enforcement of timber harvesting laws on private lands to the NHDFL (New Hampshire Division of Forests and Lands, 2021). Thus, it is the UNHCE that supports private forest landowners and assists with cost-share programs, like the Forest Stewardship Program.

New Hampshire offers a professional forester licensing program, which was created in 1990 (New Hampshire Timberland Owners Association, 2015) . NH-1 said that “the main reason why we have a licensing law in New Hampshire is to protect the

public,” ensuring that landowners are treated fairly in timber harvest transactions. Like Maine, Georgia, and Mississippi, New Hampshire does not require landowners by law to consult with a professional forester in order to harvest timber. Still, the UNH encourages landowners to seek out professional expertise.

NH-1 shared that timberland conversion is a challenge in New Hampshire and that the state’s tax incentive program provides a means to curb this issue and subsequently protect public trust resources. Though it does not require all enrollees to prepare a forest management plan, landowners with a plan, or “stewardship documentation,” are eligible for an even lower taxation rate (NH-1). NH-1 also mentioned that the program penalizes landowners for exiting the program to change their land use. So, the program works forward and backward, offering both incentives for good stewardship and disincentives for lack of stewardship.

Texas <i>(Landowner Stewardship)</i>	"Nearly all forestlands in the state are in private ownership, and Texans appreciate that. They live by that...They are motivated by non-regulatory education and technical assistance and incentive-based approaches to practice good stewardship." (TX-1)
Total Forested Acres 40,970,000	
Percent Private Ownership 94%	
Natl. Timber Output Rank 10th	
Primary Timber Product SW pulp. & saw logs	State Forestry Agency: Texas A&M Forest Service (TAMFS)
Saw Logs 35%	Primary Roles in Private Forests:
Other Forest Products 65%	<ol style="list-style-type: none"> 1) Fire Protection – "coordinate the response to each major or potentially major wildland fire in the state" (Texas A&M Forest Service, 2022a, n.p.) 2) Landowner Assistance and Education – "district foresters" visit landowners and recommend next steps to achieve their forest management objectives (TX-1). 3) BMP Monitoring – periodic monitoring for landowner and operator compliance with state BMPs (Texas A&M Forest Service, 2022b).
Forest Practice Act (Yr) No	Who makes the policies and how? TAMFS & Texas Forestry Association (TFA)
Forester Licensing (Yr) No	The voluntary BMPs serve as the guiding document for private timber harvesting. These guidelines are revised by a task force hosted by the TFA and including "state and federal agencies, environment organizations, landowners, loggers, academia, etc." (TX-1).
Harvest Plan/Permit Rqd No	Who has a voice in policy discussions?
Harvest Notification Rqd No	<ul style="list-style-type: none"> • Primary: AMFS and Texas Forestry Association ["They both have a big voice and both play a role in bringing the task force together to review BMPs" (TX-1)]
Tax Incentive Program(s) Yes	
Cost-Share Program(s) Yes	
Perceived Degree of Regulation in State Forest Policies	
"We don't have government regulated BMPs, but we do have market regulated BMPs, and they are institutionalized through the entire private sector. It's the cost of doing business now." (TX-1)	
Perceived Private-Public Emphasis in State Forest Policies	
"Texans value private property. It's one of those central themes that goes along with what Texans believe." (TX-1)	

Table 9. Snapshot of Texas's Approach to State Forest Policies.

1.7) Texas

Texas uses a non-regulatory state forest policy approach, which emphasizes the protection of private property rights (Table 9). The state forestry agency, the Texas A&M Forest Service (TAMFS), was established as part of the land-grant university system at Texas A&M in 1915 (Texas A&M Forest Service, 2022a). For most of that time, it was known simply as the Texas Forest Service (TX-1). The agency “provides education and technical assistance to landowners and encourages them to use professional assistance throughout operations” (TX-1). The agency mostly defers technical assistance services to consulting foresters.

Though the state does not offer professional forester or logger licensing programs, the Texas Forestry Association (TFA), a private organization of “landowners, businesses, and professionals,” offers private programs (Texas Forestry Association, 2022c, n.p.). The Texas Accredited Forester Council receives and approves forester applications to become an accredited forester based on education, experience, and ethics. Designations are periodically reviewed and must be maintained through continued education, much like other professional forester licenses (Texas Forestry Association, 2022a). The Texas Pro Logger Program offers training and certification for operators, which also meets the SFI logger standards (Texas Forestry Association, 2022b). With many SFI certified mills and businesses in Texas, TX-1 said that “most of the operators become Texas Pro Loggers, because that’s the only way they can operate at those certified mills.” Like the forester program, pro loggers must maintain their designation through continued education.

Texas relies on true voluntary BMPs to encourage protection of public trust resources, meaning “there are no real government-based fines...for violations of the BMPs” (TX-1). The Texas Commission of Environmental Quality is the state’s regulatory environmental agency responsible for addressing such violations, and it requires self-reporting of noncompliance and mostly advises landowners about how best to fix the issue. That said, the state’s BMPs emphasize the importance of compliance and acknowledge the possibility of future regulations:

...to guarantee future flexibility in employing forest practices, it is important that forest managers, landowners and logging contractors recognize that these freedoms can be lost if these non-regulatory measures fail to achieve established water quality goals. (Texas Forestry Association & Texas A&M Forest Service, 2017, p. 1)

The state emphasizes flexibility and landowner-based decision-making as an important part of protecting public resources. Perhaps the factor most affecting this flexibility is the third-party certification-driven markets. As TX-1 indicated, the prevalence of SFI pressures landowners to comply with certain standards in order to sell their products competitively in the market.

Though forest policies have remained largely consistent in Texas for the past twenty or more years, TX-1 noted a change in the reception of the BMPs. They believe that the BMPs have become “institutionalized,” saying:

It’s not as hard to sell the BMPs as it used to be. People understand the terminology...[and] the practices. We still have to provide some education and outreach on it, but it’s not like we’re speaking a different language anymore. They understand the reasons why. (TX-1)

Table 10. Snapshot of Louisiana's Approach to State Forest Policy.

1.8) Louisiana

Much like Texas, Louisiana employs a largely non-regulatory approach to state forest policies, relying mostly on voluntary BMPs to protect public trust resources and strongly emphasizing private property rights. The state forestry agency, the Louisiana Department of Agriculture and Forestry (LDAF), focuses mainly on private landowner assistance, offering general guidance on BMPs and full services to prepare management or stewardship plans (Louisiana Department of Agriculture and Forestry, 2013). That said, the LDAF “endorses the services of qualified consulting foresters and urges Louisiana forest landowners to use their services for more professional management of their forest land” and consolidates a list of available consulting foresters (Louisiana Department of Agriculture and Forestry, 2021, n.p.). That list also specifies that, “Louisiana does not require the licensing of foresters, thus any person, even if he is untrained and inexperienced, may call himself a consulting forester” (Louisiana Department of Agriculture and Forestry, 2021, n.p.).

LA-1 mentioned that local laws also come into play in some areas, or parishes. LA-1 noted that, “although there’s no state forest policies that are law, there are some parish ordinances” that regulate timber harvesting. For example, in “some parishes...the logger has to get a loggin’ permit...it’s gotten to the point where you can hardly sell timber in that parish because there’s so many parish regulations, not by the state...It’s by the local government” (LA-1).

The Louisiana Forestry Association plays a key role on the state policy stage. Not only is it one of the most active organizations in policy-making discussions, but they also

partner with the LDAF to revise and publish the BMPs. Like New Hampshire and Texas, Louisiana relies on its private forestry agency (LFA) to offer and administer its SFI-affiliated Master Loggers program. The LFA also fields complaints and concerns about the work of Master Loggers and “will...contract with a consultant or a forester, and that forester will go out and do a determination to see if there really was” any violation of SFI standards (LA-1). The association strongly encourages “any and all logging contractors and foremen” to become a Master Logger, and state on their website, “Louisiana is 50% forestland, and in order to keep our state beautiful we must partake in the SFI program. The SFI program will provide the tools needed to keep our forests healthy and growing” (Louisiana Forestry Association, 2022, n.p.). LA-1 expressed that this program has had a positive impact on loggers: “I think overall, the loggers these days are a lot better knowin’ the right thing to do.”

According to LA-1, Louisiana’s voluntary forest policy system strongly prioritizes private property rights, and “we would like to keep it that.” This was reinforced by its placement on the private side of the private-public scale (Table 10). They explained the importance of the timber industry in the state’s economy and pressuring the industry with regulation would be like “wantin’ to bite the hand that feeds you” (LA-1). LA-1 explained that both public and private forestry entities (mostly the LDAF and LFA) help policy makers to understand why a non-regulatory approach to private forest management continues to be the best way to protect public trust resources.

New Jersey <i>(Landowner Stewardship)</i>		"At the state level, we're in a conservation posture, and many of our laws and many of our actions are based on that conservation aspect...[but] ultimately, all the programs are voluntary, [and] the state plays a role [in] enabling those volunteer actions." (NJ-1)
Total Forested Acres	1,990,000	State Forestry Agency: New Jersey Forest Service (NJFS)
Percent Private Ownership	48%	Primary Roles in Private Forests:
Natl. Timber Output Rank	41st	<ol style="list-style-type: none"> 1) Landowner Assistance and Education – provide general advice and recommendations about state forestry programs [i.e., Farmland Assessment Program (tax incentive) and Forest Stewardship Program (technical and financial assistance)]. 2) Administer State Forestry Programs – “review [and inspect] forest management plans” required for participation in the state’s forestry programs (New Jersey Forest Service, 2021a, n.p.). 3) Maintain and distribute List of Approved Foresters.
Primary Timber Product	Hardwood saw logs	Who makes the policies and how? NJ Legislature & NJ Bureau of Forest Management
Saw Logs	86%	New Jersey’s legislature ultimately changes state statutes pertaining to forestry. The BMPs guide specific forest practices and are determined by the New Jersey Bureau of Forest Management (New Jersey Bureau of Forest Management, 1995).
Other Forest Products	14%	
Forest Practice Act (Yr)	Yes (1969)	Who has a voice in policy discussions? “We probably have...the same number of trees and lawyers in the state, so we do have a lot of arguments” (NJ-1).
Forester Licensing (Yr)	No	<ul style="list-style-type: none"> • Primary: “the body politic” (NJ-1), private industry representatives • Secondary: Environmental NGOs [“Advocacy groups...are very effective at messaging” (NJ-1)], public/community [“Our community forestry programming goes back to the late 1880s...[so] they play a role” (NJ-1)].
Harvest Plan/Permit Rqd	Yes, if near wetlands	
Harvest Notification Rqd	No	
Tax Incentive Program(s)	Yes	
Cost-Share Program(s)	Yes	
Perceived Degree of Regulation in State Forest Policies		Perceived Private-Public Emphasis in State Forest Policies
<p>“We have some incredibly interesting laws on the books, but...their [forest landowners’] actions are more on a volunteer basis...[within] the letters of the law and the process” (NJ-1).</p>		<p>“We have a human population density where water conservation and forest conservation really have to go hand in glove...Those that have the power...are interested in keeping spaces aesthetic, believing that aesthetic will translate into the environmental” (NJ-1).</p>

Table 11. Snapshot of New Jersey’s Approach to State Forest Policies.

1.9) New Jersey

New Jersey's approach to state-level forest policy emphasizes public trust conservation and involves both regulatory and non-regulatory policy instruments (Table 11), some of which seem to hybridize the two. Before diving into its policy aspects, it's important to understand that New Jersey is different from most states in the study subset. Though forests cover 40% of the state's lands (Crocker et al., 2017), New Jersey is home to a large urban population and has "very little commercial milling...[and] utilization components" (NJ-1). That said, the state enacted its first forestry laws in 1969 under the Forestry Act, which mainly outlined and authorized powers to the state's forest agency, the New Jersey Forest Service (NJFS), rather than prescriptive practices (New Jersey Forestry Act, 1969).

New Jersey's forestry policies also include unique forestry professional designations but not a professional forester licensing program. In 1940, New Jersey passed the Tree Expert Act, designating "Certified Tree Experts," certified arborists meant to protect landowners from poor quality tree care work (New Jersey Board of Tree Experts, 2022). In 2010, New Jersey introduced the Tree Expert and Tree Care Operators Licensing Act and amended it in 2017 (New Jersey Board of Tree Experts Act, 2017). The Act limits many tree assessment, care, and removal activities to licensed professionals and shows the importance of urban forestry in the state (Licensing of Tree Experts and Tree Care Operators, 2022). Foresters, on the other hand, are not licensed in New Jersey, but they can be registered with the state under the NJFS's List of Approved Foresters, a list of foresters who have completed minimum education and work

experience (New Jersey Forest Service, 2021b). There are no state or private programs regulating professional loggers, not even third-party certified training programs.

New Jersey's policies specify three scenarios that may require a forest management plan. First, under the Farmland Assessment Act of 1964, landowners must obtain a woodland management plan—prepared by an approved forester—to enroll in the Farmland Assessment tax incentive program and be “eligible for reduced property taxes” (New Jersey Forest Service, 2022, n.p.). Second, under the Forestry Act, landowners must obtain a forest stewardship plan, prepared by an approved forester, in order to enroll in NJFS's Forest Stewardship Program (New Jersey Forestry Act, 1969). Third, under the Freshwater Wetlands Protection Act of 1987, which “regulates forestry activities conducted within forested wetlands and transitional areas,” landowners harvesting timber in forested wetlands must obtain either a wetland permit or “an approved forest management plan prior to conducting the work” (New Jersey Bureau of Forest Management, 1995, p. vi). In this way, a large portion of the harvesting activities in New Jersey are done so under some kind of forest management plan.

NJ-1 emphasized New Jersey's focus on resource conservation and indicated that continued rapid growth and urbanization are challenges for the state's private forests. NJ-1 also noted that even though the state's urban populations drive the need for increased resource use, they also tend to push for policies that protect resources:

Those that have the power are very engaged and interested in keeping spaces in their aesthetic state, believing that the aesthetic will translate into the environmental...I think...that's what's driving it [policy change], is the fact that the affluent recognize that from a quality-of-life standpoint, they want these spaces conserved. (NJ-1)

Michigan <i>(Participatory Conservation)</i>	"There is not a heavy state influence in private lands...There are laws...we're not completely the Wild West...[but] we're very much more on the incentives side of the equation here in Michigan...which reinforce[s] private property rights." (MI-1)
Total Forested Acres	20,311,000
Percent Private Ownership	62%
Natl. Timber Output Rank	15th
Primary Timber Product	Hardwood pulpwood
Saw Logs	39%
Other Forest Products	61%
Forest Practice Act (Yr)	No
Forester Licensing (Yr)	No
Harvest Plan/Permit Rqd	No
Harvest Notification Rqd	No
Tax Incentive Program(s)	Yes
Cost-Share Program(s)	Yes
Perceived Degree of Regulation in State Forest Policies	
"There is not state involvement in the vast majority of private timber sales in Michigan. There's no permitting process required. There is no tax or fee associated with selling timber in Michigan." (MI-1)	
Perceived Private-Public Emphasis in State Forest Policies	
"We have a Right to Forest Act, which protects a landowner's right to practice forest management." (MI-1)	

Table 12. Snapshot of Michigan's Approach to State Forest Policies.

1.10) Michigan

MI-1 describes Michigan's approach to state-level forestry policies as "fairly hands off" and "not a very intense regulatory environment for private forestlands." Michigan relies mainly on voluntary BMPs and tax incentive programs to protect public trust resources in its private forests (Table 12). This emphasis is reflected in the duties of the state's forestry agency, the Forestry Division of the Michigan Department of Natural Resources (MDNR):

Because the legislature doesn't have a lot of regulations limiting landowner behavior in Michigan, the [M]DNR does not act as a regulatory agency regarding private lands. There is limited interaction with private landowners. (MI-1)

With such a high portion of state-owned forestlands ("4 million acres... which is 20 percent of our 20 million acres in the state") the agency mostly focuses on state timber sales (MI-1). The agency's service foresters can provide private landowner assistance, but they cannot guide landowners through the timber sale process (Michigan Department of Natural Resources, 2022a).

Like New Jersey, Michigan does not offer professional forester licensure, but its MDNR offers the Registered Foresters Program (Michigan Department of Natural Resources, 2022b). This voluntary program vets and certifies professional foresters who meet education, experience, and continued education standards. Landowners are not required to consult a registered forester to harvest their timber, but they are required to consult with one if they wish to enroll in Michigan's two forestry-specific tax incentive programs. The Commercial Forest Program, established by the Commercial Forest Act of

1925, offers “a tax break for managing forests for commercial forest products...in exchange for legal access to their land for hunting and fishing and trapping” (MI-1). In 1994, the program began requiring a forest management plan written by a registered forester (Michigan Department of Natural Resources, 2022a). Family forest landowners shied away from the program due to its public access requirement; so, in 2006, Michigan established the Qualified Forest Program, which provides the same tax break benefits without the promise of public access (MI-1). As MI-1 stated, “keeping property taxes low...doesn't mandate good land management, but it helps.”

Because Michigan is home to a “very robust” and highly accessible forest products industry, SFI certification is widespread (MI-1). MI-1 stated, “in the absence of forest practice laws...certification really set[s] the bar with the standards of sustainability...[and] reinforces those good behaviors that Michigan considers largely voluntary.” Even the state-owned forestlands are SFI and Forest Stewardship Council (FSC) certified. Like other states where SFI is prevalent, Michigan hosts a Master Logger Certification Program through the American Loggers Council and the Michigan SFI State Implementation Committee (Michigan Master Logger Certification, 2022).

As MI-1 indicated using the public-private scale, “private property rights are well protected in Michigan.” In fact, in 2002, the state enacted the Right to Forest Act, which protects just that: a private forestland owners’ right to harvest timber. As long as a landowner is “voluntarily using sustainable forestry practices as approved by the commission [of natural resources],” then no nuisance lawsuit may be brought against them (Right to Forest Act, 2002).

Missouri <i>(Participatory Conservation)</i>	"Traditionally and culturally, Missouri is a very strong believer in private property rights...We choose to provide a more incentivized approach to conservation instead of a regulatory program." (MO-2) "It's guiding. There's no regulation. Everything is voluntary in this state...It always has been." (MO-1)
Total Forested Acres 15,409,000	
Percent Private Ownership 82%	
Natl. Timber Output Rank 23rd	
Primary Timber Product Hardwood saw logs	State Forestry Agency: Missouri Department of Conservation (MDC)
Saw Logs 89%	Primary Roles in Private Forests:
Other Forest Products 11%	1) Landowner Assistance – provide landowner conservation services "including marketing, selling, and administering timber sales" (MO-2); agency foresters prepare forest management plans for landowners (Missouri Department of Conservation, 2022b).
	2) Managed Woods Program – administer and monitor tax incentive program.
	3) Fire Protection – respond to wildfire events on public and private lands.
Forest Practice Act (Yr) No	Who makes the policies and how? Missouri Conservation Commission & Missouri Forest Advisory Council
Forester Licensing (Yr) No	The state constitution allocates policy making powers within the MDC to the Missouri Conservation Commission. The Missouri Forest Advisory Council, a group of public and private forestry stakeholders, also meets to "craft...comprehensive guidelines" (MO-2) (Missouri Department of Conservation, 2014).
Harvest Plan/Permit Rqd No	Who has a voice in policy discussions? "We truly are a collaborative state...Everyone's on the same page" (MO-2); "There is a coordinated effort when interests align" (MO-1).
Harvest Notification Rqd No	<ul style="list-style-type: none"> • Primary: Legislature, state agency leaders, private industry organization [Missouri Forest Product Association] • Secondary: Environmental NGOs, landowner organizations
Tax Incentive Program(s) Yes	
Cost-Share Program(s) Yes	
<p>Perceived Degree of Regulation in State Forest Policies*</p> <p>← 1 1.5 2 → 3 → 4 → 5 → 6 → 7 → Regulatory</p>	
<p>Perceived Private-Public Emphasis in State Forest Policies*</p> <p>← 1 → 2 → 3 → 4 → 5 → 6 → 7 → State forest policies emphasize public trust resources.</p>	
<p>"We have better support from the public...if we choose a non-regulatory approach...If we were to go more towards regulation...we'd probably lose support...That's important to earn our public trust. In order to earn that trust, we incentivize and advise." (MO-2)</p>	
<p>"We do emphasize private property rights, but we also demonstrate the public trust on our state land. I think we hit that sweet spot right in the middle." (MO-2)</p>	

Table 13. Snapshot of Missouri's Approach to State Forest Policies. *Responses from two interviewees were averaged.

1.11) Missouri

Missouri was the only case study state with two participants, each with a different forest policy background. Both participants mostly agreed on their descriptions of the state's policies. Missouri's state forest policies are non-regulatory and focus on voluntary compliance and tax incentives for landowners (Table 13) (Missouri Department of Conservation, 2022b). The Missouri Department of Conservation (MDC) is responsible for engaging private forest landowners, and MO-1 described it as the "go-to" agency.

Missouri does not require a timber harvesting notification or permit and does not offer a professional forester licensing program; however, the MDC's administrative policies promote the use of forest management plans and the use of consulting foresters. For example, landowners owning 30 acres or more who utilize the MDC's Call Before You Cut Program (a toll-free phone line and website open to landowner inquiries about managing their forests) receive a "free site consultation with a consulting forester" (MO-2). They connect landowners with members of the Missouri Consulting Foresters Association, a private organization of foresters that meet certain education and experience criteria (Missouri Consulting Foresters Association, 2016). MDC foresters may guide landowners through the harvesting process, but the agency's policies require that staff foresters prepare a forest management plan for landowners who choose to use their services (Missouri Department of Conservation, 2022b).

Missouri has a long history of tax incentive programs, beginning in 1946 with the Forest Cropland Program (MO-1). It allowed qualifying forest landowners to assess their land at a lower value, and the MDC would pay the property taxes (not the landowner) to

the county based on this land value (MO-2). As land values changed and state property taxes remained low, the draw of the incentives waned. In 2017, the program was revised, becoming the Missouri Managed Woods Program (Missouri Department of Conservation, 2022a). Now, participants must obtain a forest management plan, actually follow it over their “10-year property tax abatement,” and coordinate “an annual visit from a Department of Conservation forester” (MO-2). Enrollment is “slowly building” (MO-2).

MO-1 and MO-2 both agreed that Missouri equally values private property rights and public trust doctrine and communicated its citizens’ connection and commitment to conservation (Table 13). MO-1 said that “Missourians really do value their conservation department and their conservation ethics...We take our outdoors very seriously” (MO-1). They both agreed that the state’s voluntary compliance and incentives approach made “a huge difference” on the landscape by guiding protection of public trust resources (MO-2).

New York <i>(Participatory Conservation)</i>	"It [state forest policies] is incentive-based, for the most part...Surprisingly, not a lot of regulation for New York. They [landowners] basically sign up to be regulated ...and when it comes to violations [or enforcement], they [state forestry agency] are generally a paper tiger." (NY-1)
Total Forested Acres 18,887,000	
Percent Private Ownership 74%	
Natl. Timber Output Rank 24th	
Primary Timber Product Hardwood fuelwood	State Forestry Agency: <i>New York Department of Environmental Conservation (NYDEC), Division of Lands and Forests</i>
Saw Logs 36%	Primary Roles in Private Forests:
Other Forest Products 64%	<ol style="list-style-type: none"> 1) Landowner Assistance – provide "the information [landowners] need to manage" their forests and maintain list of Cooperating Foresters (New York State Department of Environmental Conservation, 2021) 2) State Forestry Programs – administer and fund tax incentive, cost-share, and other landowner assistance programs (New York State Department of Environmental Conservation, 2022)
Forest Practice Act (Yr) Yes (1980)	Who makes the policies and how? <i>New York Legislature and NYDEC</i>
Forester Licensing (Yr) No	New York's legislature can change or introduce state laws pertaining to forestry. The NYDEC is responsible for developing guidance and "programmatic" rules to support and implement the laws (NYS DEC: Division of Lands and Forests et al., 2018)
Harvest Plan/Permit Rqd No	Who has a voice in policy discussions? "We have a lot of people that care" (NY-1).
Harvest Notification Rqd No	<ul style="list-style-type: none"> • Primary: Private industry organization ["They're a big player in our policy development (NY-1)], environmental NGOs • Secondary: State agency leaders, landowner organizations, forester organizations, land trust organizations, academia/universities
Tax Incentive Program(s) Yes	
Cost-Share Program(s) Yes	
Perceived Degree of Regulation in State Forest Policies	
<p>"We would be quasi-regulatory but not really that strong" (NY-1)</p> <p>"The more restrictive you get, the harder it is...to enforce those rules.</p> <p>The perfect becomes the enemy of the good, too. I think we turn a lot of people off if we get into being super, super restrictive." (NY-1)</p>	
Perceived Private-Public Emphasis in State Forest Policies	
<p>"The items that New York offers to protect...public resources are, for the most part, voluntary...They're mostly things that you have to sign up for... I think [they] are pretty respectful of private property owners" (NY-1).</p>	

Table 14. Snapshot of New York's Approach to State Forest Policies.

1.12) New York

NY-1 described New York's approach to state forest policy as quasi-regulatory (Table 14). The state's private forest regulation began in 1946 with the enactment of the Hammond-Demo Forest Practice Act (Howard, 1947), which was amended in 1980 (New York Forest Practices Act, 1944). NY-1 noted that these laws are "not necessarily forestry [laws.]" They outline prescribed burning regulations on private lands rather than comprehensive forest practices. In this way, private forest management is primarily guided by the state's voluntary BMPs and local laws (NY-1). NY-1 stated that "we are a Home Rule state, so...towns can have some really restrictive rules that target forestry...[like] requiring a forest stewardship plan."

The New York Department of Conservation's (NYDEC) Division of Lands and Forests is the state agency responsible for guiding forest practices on private lands (New York State Department of Environmental Conservation, 2022). Their "stewardship foresters" provide landowner assistance but leave most forest management services to consulting foresters, including "timber sale administration, forest stand improvement, forest tax law plans, [and] appraisals" (NY-1). The NYDEC maintains a List of Cooperating Foresters, a roster of forestry consulting professionals who have "a four-year degree...[forestry work] references...[and who] maintain continuing forester education credits" (NY-1). This registration is not required for practicing foresters, and landowners are not required to work with Cooperating Foresters to harvest their timber (New York State Department of Environmental Conservation, 2021). In fact, "based on the National Woodland Owners' Survey...less than 20 percent of landowners...use a forester" (NY-1).

The same goes for loggers; landowners are not required to work with professionally trained operators, but they are encouraged to seek logger certified through the Trained Logger Certification Program, hosted jointly by public and private organizations (Watershed Agricultural Council, 2021).

New York also offers its private forest landowners a tax incentive program called the Forest Tax Law Program, first introduced in 1974 (New York State Department of Environmental Conservation, 2020). Prior to the 1970s, this program offered a tax break to promote commercial harvesting, but little to no penalties for exiting the program and/or converting timberlands (NY-1). Today, private landowners can enroll by hiring a Cooperating Forester to write a 15-year (or longer) forest management plan to receive “an 80 percent reduction in the assessment of the enrolled lands” (NY-1). The plans are initially reviewed and approved by the NYDEC, then monitored over time to ensure landowners actually follow the outlined management activities. In the current program, penalties for exiting the program are “pretty high...[and] for partial conversion, it's five and a half times your back taxes...It's confiscatory in some cases” (NY-1).

NY-1 indicated that New York’s policies emphasize both private property rights and the public trust doctrine (Table 14). Although the state passed a law establishing a landowner’s right to practice forestry in 2004, (Daniels, 2005), NY-1 contends that it’s “not a really strong right-to-practice-forestry law.” For example, the law requires towns to submit proposed ordinances impacting forest management to the DEC for review, but it does not grant the DEC the authority to change or deny such ordinances.

2) Case Study State Comparisons on the Public-Private Scale

Interviewees were asked to describe their state's forest policies using two numeric scales: one representing policy emphases on private property rights versus public trust doctrine (i.e., the private-public scale), and the other representing the state's degree of intervention in forest management on private lands (i.e., the regulatory scale). These scales provided some quantitative data to supplement and support the larger qualitative dataset. Both scales presented seven options, numbers one through seven, which were meant to offer choices to the participants while keeping the scales relatively simple. However, multiple participants chose half numbers, which then expanded the scales into thirteen possible options.

When asked to rank their states' forest policies emphases on the one to seven numeric scale (Figure 8), nine interviewees (50%) described their states as equally balanced between the two extremes. These states ran nearly the whole range of typology categories, representing Expert Stewardship, Science-Bureaucracy, and Participatory Conservation. This suggests that states may achieve a perceived balance between public and private interests using different combinations of policy instruments. Their descriptions included phrases like "balanced approach" (GA-1), "strike a balance" (ME-1), and "in the middle" (MO-1, MS-1, NY-1).

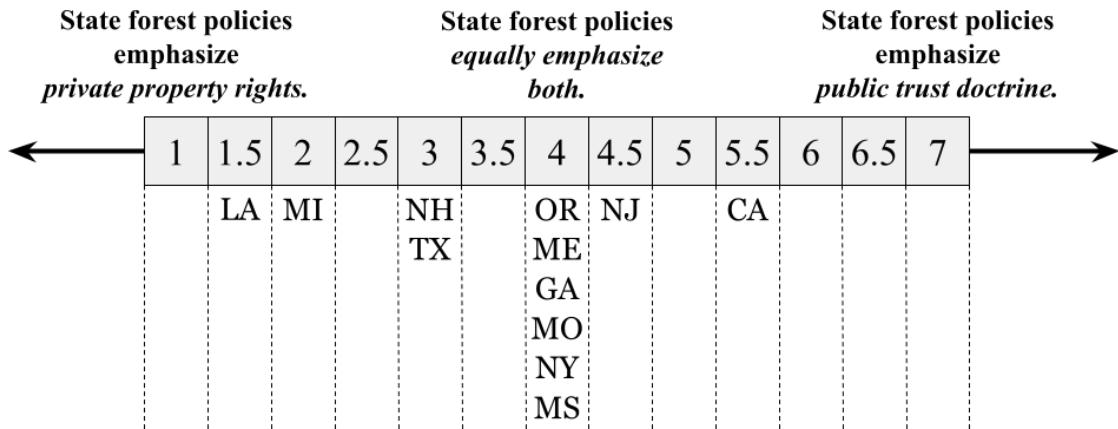


Figure 8. Private-Public Scale Comparison. This figure shows participants' responses to the question about policy emphasis of private property rights and public trust doctrine.

Five states fell within the private property rights side of the scale, and this was further demonstrated in their descriptions of forest policies. These interviewees used phrases like, “it’s up to them [landowner]” (MS-1), “hands off” (MI-1, GA-1), “self-regulation” (TX-1), and “individual freedom” (MI-1) to describe their states’ approaches to policy. Two interviewees gave particularly clear messages about the bias toward private property right:

New Hampshire’s state motto is ‘Live Free or Die.’ I would say a lot of our policies revolve around that. (NH-1)

Texans value private property. That’s one of the things that, in my experience here, is extremely important. It’s one of those central themes that goes along with what Texans believe. (TX-1)

With many states demonstrating policies directly intended to protect public trust resources, I asked each participant if their states demonstrated any policies that explicitly protected private property right. Only three states possessed laws that fit this criterion.

In Louisiana...a landowner is entitled to at least half of what the timber is worth...If our enforcement agents can prove that that timber was worth more than 50 percent of what that landowner got, then they can take 'em to court. (LA-1)

We do have a Forest Rights Act, which protects a landowner's right to practice forest management...Landowners in Michigan have a legal right to practice forest management. (MI-1)

We do have a pretty strong right to practice farming, but we don't have a really strong right to practice forestry law here in New York... In a lot of ways, it's definitely not great for promoting forest management. (NY-1)

Even though multiple states favored private property rights, few have incorporated this emphasis directly into law.

Two states' interviewees, New Jersey and California, indicated that policies fell within the public trust doctrine side of the scale (i.e., less than four). Both states' participants indicated that this stemmed from the strong influence of the general public.

It's more about the human attitudes and experiences. With that in mind, we are currently jealously guarding state forest resources on public and private lands. (NJ-1)

Public's a key part of it [policy], making sure we're doing our job and making sure that resources are protected, and I think we provide them every opportunity to engage in the process. (CA-1)

New Jersey and California's participants also mentioned that their states have substantial urban components within their populations that assume "the aesthetic will translate into the environmental" (NJ-1).

California was the more extreme of the two, and its participant described the multiple avenues in which the public can engage with forest management on private lands. Online public access to all timber harvesting documents "provides a level of

transparency to the timber harvesting plan review process” but also shares otherwise private, and sometimes sensitive, information about landowners (CA-1). The mandatory public comment period within the permit review process allows individuals to ask questions and “bring up specific information that the agency hadn’t considered in the plan...and make sure that the resources are being protected,” comments that can have potential impacts to the landowners and the review process (CA-1). Though opportunities for public comment or interaction is not exclusive to California, this degree of public engagement in private forest management seems unique among the case study states.

3) Case Study State Comparisons on the Regulatory Scale

The regulatory scale roughly followed the same distribution as the private-public scale responses, and comparing the two scales led to a few key observations (Figure 9). This scale was far more familiar to the interviewees because they were all well acquainted with the traditional voluntary-to-regulatory framework. Because seven options did not split evenly into the three categories on the scale, I defined the three categories as follows: non-regulatory/voluntary, 1 to 2.5; quasi-regulatory, 3 to 5; and regulatory, 5.5 to 7.

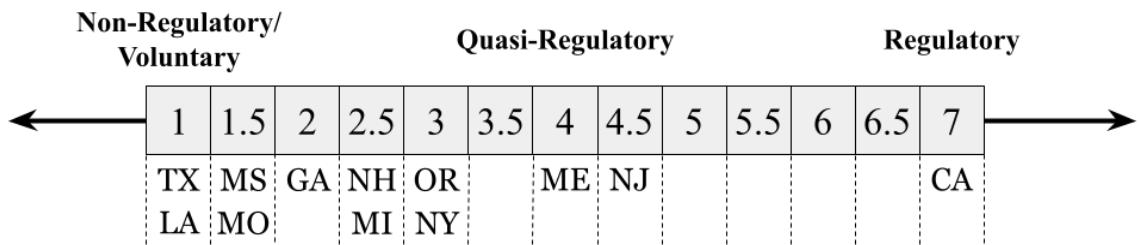


Figure 9. Regulatory Scale Comparison. This figure shows participants' responses to the question about degree of state intervention.

Most participants (60%) placed their state's forest policies on the non-regulatory side of the scale, including all five of the states that indicated bias toward private property rights and three states that indicated an equal private-public balance. These states represented all three of the four types except Science-Bureaucracy. It also included all three of the Expert Stewardship states. Participants' used terms like "recommend" (GA-1, LA-1, TX-1), "guide" (MI-1, LA-1, OR-1), "encourage" (LA-1, TX-1, NH-1, MO-2), "advise" (MS-1, GA-1), "motivate (TX-1), "stress" (GA-1), and "try" (MO-2) to describe how their states interact with landowners to promote sound forest practices on private lands. These words indicated soft approaches with lower degrees of state intervention. MO-2 noted, "we are all carrot," meaning Missouri relied mainly on incentives to get landowners to use sound practices on private forests.

Four states fell within the quasi-regulatory section of the scale, representing all four state types except for Expert Stewardship. Although Cristan et al. (2018) provided a distinct definition of quasi-regulatory ["when BMPs are non-regulatory yet water quality infractions result in citations" (p. 74)] in their study, I chose not to use this definition when speaking with interviewees. Instead, the interview guide phrased quasi-regulatory

as anything in between non-regulatory and regulatory, leaving it open to interviewees' own interpretation. These interviewees described quasi-regulatory in this way:

[It's] voluntary compliance...There are some things that are voluntary, but they have regulatory teeth behind them. (ME-1)

More on a volunteer basis...[within] the letters of the law and the process. (NJ-1)

Oregon has statutes and rules...[but] landowners have a pretty wide margin to do quite a bit. (OR-1)

They [landowners] sign up to be regulated basically...and when it comes to violations [or enforcement], they [state forestry agency] are generally a paper tiger. (NY-1)

Though interviewees were given license with the quasi-regulatory term, their descriptions were very similar to Cristan et al.'s (2018). Interestingly, MO-1, MS-1, and NH-1, who placed their states closer to the non-regulatory side, also alluded to quasi-regulatory policies, using phrases like "voluntary up to a certain point" (MS-1); and "voluntary regulations...There's bumpers on some things, but there's a lot of room in between" (NH-1).

California was not only the sole state placed on the regulatory side, but also placed at the very end. CA-1 used terms like "enforce," "evaluate," and "ensure" to describe how their state interacts with landowners to promote sound forest practices on private lands. ME-1 and OR-1 also used "enforce" and "comply," but not to the same extent. CA-1 also stated that the state's regulations are in place to promote certainty among both landowners and the public:

They definitely address things through regulation most often...It really...provides the public and the landowners some certainty...By

developing regulation to address the issues, it gives the landowners whose lands are being managed some certainty as to what they need to do to be able to manage their land...At the same time, the public knows through regulation what their role is and what the expectation is in terms of resource protection. (CA-1)

4) Policy Voices: Who Speaks the Loudest on the State-Level Forest Policy Stage?

Participants were also asked to describe the policy actors that normally play a role on the state-level forest policy stage, or individuals or groups that influence policy decisions made by the state. They identified a wide range of private and public actors with voices involved in policy discussions, revealing 12 common actors. Table 15 shows the compilation of actors described by each interviewee, allowing for direct comparison to show which actors play which roles in which states. Keeping this question open-ended rather than providing a list of options allowed participants to include unforeseen entities, shown as “Other Voices.” The smattering of letters in the table also showed the number of influential players in any one state, ranging from four to 11, with an average of seven present actors. Again, it was California that emerged as an extreme case with 11 actors total.

Table 15. Summary of Policy Actors and Roles. This table summarizes participants' descriptions of policy actors. P= primary voices; S= secondary voice; (priv) = private actor; (pub) = public actor; (priv & pub) = both.

State	Academia/univ. extension Board of Forestry/exec.	General public/voters	Legislature or governor	Local government leaders	State agency leaders	Environ. advocacy	Forester org(s)	Industry org(s)	Landowner org(s)	Logger/operator org(s)	Third-party cert.	Other Voice(s)	
California	S P S S S S					S S S S S						State and local fire districts (pub)	
Oregon	S S S					P	P	S				Soil & Water Cons. Dists. (priv); watershed councils (priv & pub)	
Maine		S S P P				S	S S	S S	S S				
Georgia		S S P				S S	P	S S S					
Mississippi	S	S	S			S	P*	S	P				
New Hampshire		S	S			S S	S P					Land trust organization (priv)	
Texas			P			P	P	P	P				
Louisiana		S S	S				P	S					
New Jersey		S P				S	P					"village elders within the forestry community" (priv & pub)	
Michigan		S	S			P	S	P	S S	S		hunting organizations (priv); conservation districts (priv)	
Missouri	S		P	P		S S	P	S				Walnut Council (priv)	
New York	S	S	S	S		P	S	P	S			Land trust organization (priv)	
Frequency (%)	33	17	33	92	42	83	75	67	100	92	50	17	

Interviewees were also asked to consider which voices were the loudest, which encouraged them to distinguish *primary voices*, those with the strongest influence within policy discussions, from *secondary voices*, those active but with less influence. Participants described primary voices as “big” (LA-1, NY-1, TX-1); “very active” (ME-1, NH-1), “powerful” (ME-1; OR-1); “leaders” (ME-1); “prominent” (OR-1); “heavy hitters” (NH-1); “heavily engaged” (CA-1); and “effective at messaging” (NJ-1). They tended to provide less description of secondary voices and used terms like “involved” (GA-1, MO-2); “represented” (NH-1, CA-1); “engaged” (CA-1); and “interested” (OR-1) to describe their role in policy conversations.

Despite their states’ major differences in policy approaches, most participants reported similar actors who played similar roles on their state’s policy stage. In fact, nearly all states (83%) identified the following three actors as present in a primary or secondary capacity: private industry representatives and organizations, legislature or governor, and landowner organizations (Table 15). Of the three, industry was listed most frequently as a primary voice, emphasizing the power of the private sector in policy decision-making and outcomes. These organizations tended to vary in membership composition, some including other private landowners, foresters, and even public agency representatives. I anticipated a strong industry presence in most case studies because I purposely selected states with generally high timber production rankings.

Interviewees described the legislature as a secondary voice in policy discussions rather than a primary voice. This may indicate that legislatures can make changes, but often they are not the primary policy actor initiating such changes. It was interesting that

even interviewees in strongly non-regulatory states acknowledged the legislature's power and role in developing policy.

Every participant (with the exception of New Jersey) indicated that organizations representing private forest landowners were active in policy discussions; but, much like the legislature's voices, they were mostly described as secondary to others. This showed that landowners are often actors on the policy stage, but they do not play the biggest role in driving policy change. All participants recognized private landowners as crucial stakeholders in the management of forested landscapes, yet their roles in policy discussions are somewhat muted.

DISCUSSION: THEMES ACROSS CASE STUDY STATES

Though forest policy scholars in the U.S. have a long tradition of classifying voluntary and regulatory states, interviews with policy experts in case study states proved that states' forest policies are far more complex than the traditional categories imply. In this section, I identify common ground across states and highlight key differences. The focus of this study was not to test or confirm the quadrant typology or specifically measure diversity of states. Rather, this study provides examples of the complexities of state-level forestry policies, especially as they continue to change over time. It also demonstrates the importance of qualitative data to help describe policy diversity.

1) A Bias Toward Private Property Rights

Discussions about states' forestry policy emphases of private property rights and public trust doctrine revealed a general bias toward property rights, affirming Freyfogle's (2003) American value for the rights of the landowner. That said, I did not anticipate the high number of participants indicating an equal balance between the private and public interests in their state. All case study states demonstrated a duty to protect public trust resources on private lands, but most states policies' employed policies supporting private property rights. In other words, most states demonstrated that landowners hold a majority of the "sticks" in the proverbial "bundle" (Anderson, 2006; Quartuch & Beckley, 2014; Vonhof, 2001) and that Vonhof's (2001) "seesaw" (p. 242) is generally weighted more heavily toward the private property rights side.

The “duty-sticks” of the state agencies varied widely, with some duties embedded in law—like California’s legal responsibility to review timber harvesting permits—and others informally fixed in common practice. It also seemed that, in some cases, agencies shared these “duty sticks” with consulting foresters or other forestry professionals. While some agencies were able to perform the entire gamut of forest management services for landowners, others were limited to educational services, careful not to impose on the expertise and profession of the consulting forester. In these states, professional foresters are granted the responsibility to advise landowners on the use of forest practices, both to protect landowner interests and the integrity of public trust resources.

The strong policy voice of the private forest products industry may also be indicative of a slight bias toward private property rights. Though participants also noted the state government and other landowner organizations as key policy actors, private industry organizations were more often viewed as drivers of policy changes, the loudest voices on the policy stage. Private industry organizations are also commonly involved in administrating professional forester certifications, professional logger training programs, and BMP revisions, which shows they are involved in policies meant to regulate forest practices.

2) The Role of the State in Private Forests: Adding Nuance to the Voluntary-Regulatory Framework

My findings confirmed the general assumption supporting Ellefson et al.’s (2006) traditional voluntary-regulatory forest policy framework: states that emphasized private

property rights employed lower degrees of state-level intervention and more voluntary policy instruments, and those that emphasized public trust doctrine employed higher degrees of state-level intervention and more regulatory policy instruments. Interviews with participants confirmed that a majority of the case study states employed voluntary approaches to forest policies on private lands, affirming the findings of the four core U.S. forest policy studies (Cristan et al., 2018; Ellefson et al., 2006; Kilgore & Blinn, 2004; National Association of State Foresters, 2019). That said, my findings also aligned with Kilgore & Blinn's (2004) observation that no state employs a single approach to forest policy but rather a combination different tools reflecting different values. Findings also revealed the complexities of policy instruments, showing some contradictions to voluntary-regulatory assumptions. For example, all four core studies as well as Kelly and Crandall (in press) assume that Forest Practice Acts equate to increased state intervention and additional constraints on private landowners. However, some states, like New Jersey and New York, demonstrated acts that are neither comprehensive nor prescriptive. Some acts are so narrow in focus or so broadly administrative that they do not truly impose restrictions felt by private forest landowners. On the other hand, some states with mainly voluntary approaches to forest policy demonstrated regulations explicitly protecting landowners' rights to harvest; these serve as examples of increased state-level intervention increasing private property rights.

Other states incorporate regulatory tools into their voluntary programs, tools that don't fit into the traditional policy framework but may impact the protection of public trust resources. For example, of the seven case study states without professional forester

licensure, four of them administer some sort of professional forester designation program: Texas's Accredited Forester Program, New Jersey's List of Approved Foresters, Michigan's Registered Foresters Program, and New York's List of Cooperating Foresters. All four programs require applications and specific qualifications in order to accept new foresters. Though these states do not require landowners to use a designated professional forester, these programs can help landowners choose professionals well suited to meet their objectives and protect the environment.

3) Alternatives to State-Level Intervention

This study assumed that states depend mainly on forms of state-level governmental intervention (e.g., Forest Practice Act, professional licensure, tax incentives programs, etc.) to guide or regulate forest practices on private forests and protect their public trust resources. However, as Kilgore and Blinn (2004) pointed out, state government is only one of many avenues for implementing policies regarding sustainable forest management. Some states employ other non-state intervention mechanisms that either legally regulate or informally constrain, or drive, certain practices on private lands. These factors include local laws, third-party certification, and landowner stewardship. The importance of policy tool alternatives in some of my state case studies suggests, much like Cubbage et al. (2007) and Ellefson et al. (2004), that this is a fruitful avenue for further research.

3.1) Local-Level Regulation

Participants in seven states (Georgia, Louisiana, Maine, Michigan, Missouri, New Jersey, and New York) discussed how local-level government intervention influences forest management on private forests in certain parts of the state. Such states are considered Home Rule states, or states that grant “local governments...some authority over private lands” (GA-1). Thus, just as the U.S. is a patchwork of different state-level policies, some states are a patchwork of different local-level policies. Specific “counties” (NY-1), “townships” (ME-1, MI-1), and “parishes” (LA-1) tend to create ordinances involving harvesting notifications or permits, land use zoning limitations, prescribed burning limitations, or road use restrictions (weight limits, rights-of-way permissions, etc.). Interestingly, though California is considered a Home Rule state, its expert did not mention local laws in their description of the state’s forest policies.

The degree of local-level intervention depends on the area and adds another layer of complexity, and even conflict, to state-level intervention. ME-1 noted that Maine is now promoting statewide standards to address regulatory confusion and heterogeneity:

There are 451 organized towns in Maine, and I don’t remember how many have adopted the statewide standards. Like I say, with a Home Rule state, it’s a slow, arduous process. Home Rule is great. The problem is it comes with Home Rule.

Local laws across states are highly variable and only applicable in Home Rule states, making them a difficult factor to integrate into the bigger picture of states’ forest policies. The first of the core forest policy studies to factor local-level regulation into the voluntary-regulatory model was National Association of State Foresters (2019), which

found it important enough to create an additional policy approach category. It seems little research has focused on this level of regulation in the U.S. That said, the presence of local laws seems crucial in understanding the comprehensive policy framework in which private forest landowners function.

3.2) Market-Based Constraints: Third-Party Certification Programs

In several states, mills have adopted third-party independent certification systems, which can constrain forest practices on private lands. These programs, namely the Sustainable Forest Initiative (SFI) and Forest Stewardship Council (FSC), require enrolled mills to purchase timber that has been harvested under specific sustainability standards (mainly measures to protect water quality) by specially trained and registered loggers. They are also subject to annual auditing and inspections to ensure compliance.

Multiple participants asserted that the prevalence of these programs in mills significantly impacted how landowners (and forestry professionals) practice forestry on private lands. Though prevalence varied, participants noted high rates of certification in Michigan, Louisiana, Missouri, Texas, and Georgia—as high as 90% in Michigan. In fact, Missouri and Michigan’s state-owned forests are also third-party certified. As more mills enroll in the programs, non-compliant landowners have fewer outlets for timber sales. Eventually, landowners who wish to sell products to certified mills must comply with certification standards, including hiring a certified logger. Interviewees described the outcome of this trend:

Now that most of your companies are members of SFI...in a way, it [compliance] isn't voluntary. (MI-1)

Most of them [mills] are SFI certified...It's just the cost of doin' business now. (TX-1)

The industry regulates itself, from the water side of things anyway. (GA-1)

With such high prevalence in mills, certification standards for landowners were described as "market regulated BMPs" (TX-1). Perhaps MI-1 summarized this idea best: "in the absence of a forest practices law, it's really certification programs that are setting the bar with the standards of sustainability."

Industry mechanisms and market drivers are often included in forest policy studies (Bäckstrand & Lövbrand, 2006, 2016; Mortimer, 2008; Winkel, 2014), but not all recognize forest certification as an important policy instrument (Cubbage et al., 2007; Moore et al., 2012). Like Ellefson et al. (2004), my findings indicate that certification may be an alternative policy tool used to balance private property rights and public trust doctrine, offering voluntary entrance into a regulatory system.

3.3) Landowner Stewardship

Interviewees also acknowledged the role of landowner stewardship in private forest management. Nearly all participants alluded to the general land ethic found among their state's private forest landowners: an innate tendency to care for their land or "protect their environment" (GA-1), often by conducting forest practices in an environmentally conscious or less impactful way. This concept implies that landowners care for their land of their own volition regardless of available incentives or constraints.

Kilgore and Blinn (2004) and Cubbage et al. (2007) discussed landowner roles and behavior involved in policy tools (mainly educational and private market tools), but they

did not identify landowner stewardship itself as a policy tool, likely because it is not an objective mechanism that can be applied by any one sector. My results suggest that, tool or not, landowner stewardship plays a significant role in private forest management.

CONCLUSION

In the U.S., both private landowners and the general public rely on ecosystem services provided by private forests and are impacted by the diverse state-level policies that manage forest practices. The 12 case studies represented a cross-section of this policy diversity from the perspective of forest policy experts. Interviewees' qualitative policy descriptions provided opportunities to identify the overlap between voluntary and regulatory language and values, adding new information to fill gaps left open by the traditional voluntary-regulatory policy framework. Case study states demonstrated policies with a tendency towards private property rights and use of voluntary policy instruments to protect public trust resources on private lands, patterns supported by strong private industry presence in policy discussions. Though they represented states with varied policy approaches, several participants described equal emphasis of private property rights and public trust doctrine within their states, suggesting that there are several policy avenues to reach this balance, some of which include alternatives to state-level intervention.

States' interpretations of private property rights and public trust doctrine may be further examined using state constitutions. Some state constitutional clauses specify how public trust principles should be administered in those states, information not included in this study. Researchers could explore these documents to build on the state's foundational values as described by experts' policy descriptions and further define how states interpret their unique public trust responsibilities in private forest. Additionally, this analysis may

contextualize forestry policy within a larger political landscape, providing possible comparisons with policies in related industries, such as agriculture. The agricultural industry impacts some of the same public trust resources as private forests, yet their policies vary. Future studies may investigate how states determine which practices receive restrictions in different sectors impacting public trust resources.

As socioeconomic and ecological conditions change in the U.S., so do state forest policies guiding consequential forest practices, making these policies an interesting and continuous field of study. This research demonstrated firsthand the pace of policy change, as I witnessed the introduction of Oregon's historic Private Forest Accord during the course of my study. Capturing snapshots of 12 state policy systems was a feat in itself and showed the difficulty researchers face in frequently assessing and exploring state policy approaches. Yet, it also exemplified the intricacies of these policies and the importance of characterizing policy diversity beyond simplistic typologies.

CHAPTER 2: BY THE BOOK: EXAMINING CALIFORNIA'S REGULATORY
FORESTRY POLICY ENVIRONMENT FROM A FAMILY FOREST LANDOWNER
PERSPECTIVE

INTRODUCTION

California stands out as a distinctive case within the greater landscape of U.S. state-level forestry policy. Covering nearly 32 million acres, the forests of the Golden State are an essential economic resource and, as such, hold a long and complex history of state regulated management, especially on private lands (Brodie & Palmer, 2020). In the 1970s, California enacted its modern forestry laws (the Z'Berg-Nejedly Forest Practice Act) that defined the highly regulated system we see today, likely the most comprehensive and restrictive in the nation (Duggan & Mueller, 2005). These policies are consequential for private landowners as they ultimately constrain how a landowner may manage their forest on the ground. Since 1973, California has built an increasingly rigid and normative forest policy environment for its private landowners.

Approximately 42% of California forests are subject to state-level regulation, including state-, municipal-, and privately-owned lands (Brodie & Palmer, 2020). The vast majority of these state-regulated forests (39%) are privately owned, either by corporate private forest landowners (e.g., industrial and investor owners) and non-industrial private forest (NIPF) landowners (e.g., non-corporate individuals, families, organizations, universities, and Native American tribal lands not in trust) (Butler et al.,

2020). Family forest landowners, a subgroup of NIPF landowners consisting of “families, individuals, trusts, estates, and family partnerships” (Markowski-Lindsay et al., 2020, p.2) account for the majority of NIPF landowners, with approximately 75,100 total family forest ownerships. Combined, they cover in California covering 20% of the state’s total forests (Figure 10).

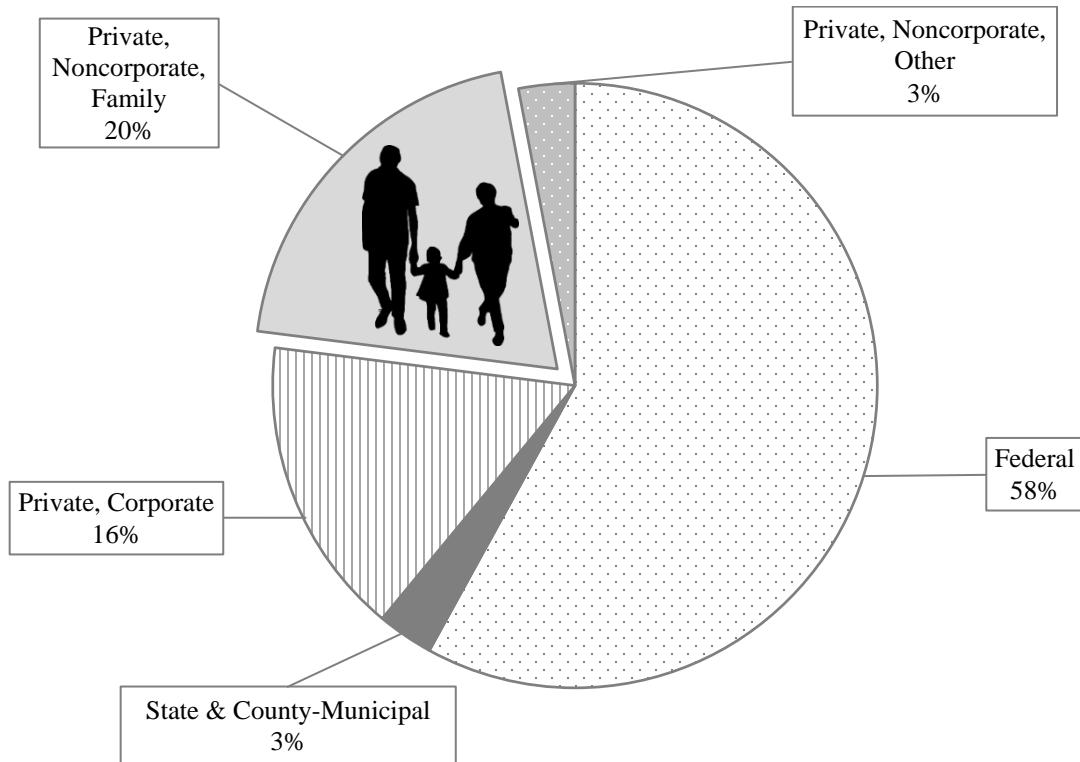


Figure 10. Ownerships of California Forestlands (percent by total acreage). This diagram emphasizes the proportion of forests held by family forest landowners as compared to other ownership types. Statistics were taken from the National Woodland Owners Survey conducted by the USFS in 2018 (Butler et al., 2020).

Researchers have shown that NIPF landowners—including family forest landowners—play key roles in California’s forests and rural communities. They contribute to the stewardship of public trust resources (Bliss, 2003; Charnley, 2008) and

forest resilience to climate change (Stephens et al., 2018). The private sector, including family forest landowners, supports California's rural, timber-based economies (Beach et al., 2005) and produces a majority of the state's annual forest product outputs (Marcille et al., 2020). Therefore, California has a vested interest in its 6.2 million acres of family forests and enacting policies that allow landowners to fulfill their roles as ecological stewards and economic contributors. Moreso than corporate landowners, NIPF landowners vary widely in their forest ownership objectives, behaviors, and subsequent impacts on the forested landscape, making them especially interesting and important study subjects. Family forest landowners hold valuable perspectives as policy users or followers and may respond to regulations differently depending on landowner characteristics, objective, or locale (Olive & McCune, 2017; Quartuch & Beckley, 2014).

Although California's family forest landowners are important stakeholders on the landscape and within the state's forestry policy system, they have received little attention in forest policy literature. Researchers have assessed the state's modern forest regulations since their inception (Gasser, 1996; Green, 1982; D. Jones, 1989; Lundmark, 1975; Vaux, 1986) and some have studied the challenges they pose for private landowners (Helms, 2001; Thompson & Dicus, 2005); but, this literature is mostly outdated and nonspecific to family forest landowners. More recent studies have begun to highlight California family forest landowners as valuable forest stakeholders, but they are non-specific to regulations (Stewart et al., 2012; Waks et al., 2019). Landowners participating in the forest policy system—some for nearly 50 years—hold valuable knowledge regarding policy application on the ground, yet this insight is largely untapped.

My research takes a qualitative, interview-based approach to explore the current relationship between California's family forest landowners and their regulatory policy environment to fill this literary gap. This chapter considers California as a single, extreme case study among the landscape of U.S. state-level forestry policy and examines the state's highly regulated system from the perspective of the family forest landowners who operate within it. I interviewed 33 family forest landowners with experience in forest management to explore: 1) their perceptions of their regulatory policy environment, 2) how California's state-level forestry policies' can impact their abilities to achieve their forest management objectives, and 3) their strategies for successfully navigating the policy system.

This study is not intended to represent California family forest landowners as a whole; rather, it offers a deep look into the inner workings of the most regulated forest policies in the U.S. through the eyes of a select group of participants. As demonstrated within the California case study in Chapter 1, private landowners can be underrepresented stakeholders in state-level policy discussions traditionally dominated by governmental and industrial policy actors. This study gives additional voices to these family forest landowners within literature. Also, California has long served as either a model or a cautionary tale for less regulated states, so this study may also inform policy discussions in other states.

1) The History of California Forestry Policy: Ever-Increasing State Intervention

Understanding the history of California forestry policy builds the context of its current regulatory structure and environment. This section provides a brief summary of state forest policy history by era and discusses concomitant policy research and considerations for private landowners (including family forest landowners). While private forest landowners are subject to federal statutes (e.g., Clean Water Act, Endangered Species Act) and state statutes (e.g., California Endangered Species Acts, Porter Cologne Water Quality Control Act), this section focuses on the state's forestry-specific policies, such as its Forest Practice Act (FPA) and Forest Practice Rules (FPRs).

1.1) Early Forestry Policy: 1870s to 1930s

Timber harvesting and its regulation have been topics of political discussion in California since the mid nineteenth century, when the logging industry boomed in old growth forests (Blumberg, 2008). As Arvola (1985) noted, “California was one of the first states to recognize a need for state policies on forests” (p. 22). Utilization was the major objective for private forest landowners, harvesting their seemingly inexhaustible land as they saw fit with little regard for public trust resources. In 1885, shortly after it became a state, California enacted its first forest law, creating a State Board of Forestry (BOF) (Arvola, 1985; Lull, 1907; Sterling, 1905). This Act acknowledged the importance of forest resources and created a very limited role for the state in regulating or monitoring forestry operations. The Board mostly focused on educational endeavors by producing botanical reports and establishing two experimental forests (Sterling, 1905). The Act,

however, was short-lived and repealed in 1893 (Lull, 1907). Its failure was attributed to its prematurity: “the time was not yet ripe for applied forestry in California” (Sterling, 1905, p. 269).

As the science of forestry developed, ideals of forest “preservation,” or conservation of forest resources, sparked renewed interest in regulation at the turn of the twentieth century (Lull, 1907, p. 278). In 1905, Senate Bill No. 638 passed, redefining state oversight of state and private forests, reestablishing a Board of Forestry dominated by industry representatives, appointing a State Forester and two Assistant Foresters, and creating agency offices. Sterling (1905) noted the merit of this bill in national context, saying, “both in achievement and point of time California ranks as one of the pioneer states in the matter of legislation tending toward the establishment of State forest policies” (p. 269). Though unprecedented, the bill was criticized for its minimal state duties, merely “urging and permitting its interested industries to protect their forest resources at their own expense” through voluntary action (Lull, 1907, p. 279).

As newly-arrived eastern lumbermen purchased properties in California and reaped the benefits of forest practice freedom, academics studying forestry impacts to water quality and fire prevention voiced a need for more structured state regulations (Blumberg, 2008; Mason, 1917). In an address to the Society of American Foresters, Mason (1917), a forestry professor from University of California, Berkeley, discussed California’s forestry issues, which included plights of private landowners. He noted that high taxes, low market prices, and low profits pressured landowners “to liquidate [their] investment and get out of the game as soon as [they] can” (p. 427). His proposed

solutions included revisions to state law to create “a thorough system of protection throughout the State” offering multiple forestry-related services to private landowners (e.g., fire protection, technical assistance) (Mason, 1917, p. 425). State focus began to turn from immediate utilization to longer-term conservation, fire suppression, and industrial land acquisition.

1.2) The First Forest Practice Act: 1940s to 1960s

The next policy milestone occurred in 1945 with the enactment of the first Forest Practice Act (FPA), which focused on fire prevention and reforestation and included a minimum diameter cutting law (Vaux, 1986). The Second World War reinvigorated the need for lumber, and timber harvesting rates quadrupled in California (Arvola, 1985; Blumberg, 2008). The FPA also created “four regional forest practice committees which formulated regulations governing logging practices in the state” (Green, 1982, p. 2). These committees were dominated by industry; so, in essence, regulations were set and maintained for the industry by the industry (Arvola, 1985; Duggan & Mueller, 2005; Gasser, 1996). Though the Act established state oversight, enforcement was almost non-existent (Green, 1982; Lundmark, 1975). Timberland conversion became rampant as the *ad valorem* timberland tax, which was dependent on standing timber volume, prompted many landowners to harvest and permanently convert their forest to other land uses (Unkel & Cromwell, 1978). Vaux (1986) reported that, “between 1946 and 1970, the owners of over 900,000 private timberland acres had posted such notices of conversion to non-timber use. This was more than 10 percent of the forestland in private ownership in

California, and studies showed that over 75 percent of the [conversion] area[s] were either abandoned or incomplete" (p. 129).

The FPA laid the foundation of California's policy system and endured for more than 25 years (Arvola, 1985). However, as environmental issues drew more focus across the U.S. in the 1960s and 1970s, the Act's environmental efficacy and legality were called into question (Vaux, 1986). In *Bayside Timber Company v. Board of Supervisors of San Mateo County*, a 1971 case, the California First District Court of Appeal deemed the Act self-serving to the forest products industry, and therefore unlawful. So, the state went back to the drawing board (Duggan & Mueller, 2005; Gasser, 1996; Lundmark, 1975).

1.3) The Z'Berg-Nejedly Forest Practice Act: 1970s

In 1973, Governor Ronald Reagan signed into law the Z'Berg-Nejedly Forest Practice Act (FPA), which introduced the regulatory framework we see today (Duggan & Mueller, 2005; Gasser, 1996; Lundmark, 1975; Vaux, 1986). It emphasized multi-use forest management objectives, restructured policy-making and enforcement procedures, created standard forest practices, and outlined commercial timber harvesting permitting and monitoring processes (California Forest Practice Act, 1973). This new permit was called a Timber Harvest Plan (THP). The FPA established a new nine-member Board of Forestry, a majority of whom were not members of the timber industry, responsible for creation and amendment of the state's Forest Practice Rules (FPRs) (Lundmark, 1975). These rules included erosion control measures, protective stream buffers, regenerative stocking standards, silvicultural restrictions, sustained production of timber, and

limitations on timberland conversion, etc. The California Division of Forestry (known as CDF, and later as the California Department of Forestry and Fire Protection, or CAL FIRE) was tasked with the inspection and enforcement of these comprehensive rules.

The Professional Foresters Law, passed in 1972, complemented the FPA by establishing the Registered Professional Foresters (RPF) license, a state-issued certification ensuring the professional forestry could only be practiced legally by experienced experts (Professional Foresters Law, 1972). The FPA created a new commercial timber harvesting permitting process centralized around the Timber Harvest Plan, a comprehensive document prepared only by an RPF, describing proposed forest practices, and subject to review and approval by the Director of CAL FIRE and, later on, several resource agencies (Duggan & Mueller, 2005). All plan and review documentation were publicly available for comment.

The FPA put California head and shoulders ahead of the nation in regulatory forestry policy and had substantial implications for private landowners (Vaux, 1986). However, I found very little literature from this era that specifically examined the impacts of the FPA on private landowners and no studies from landowners' perspectives. Primarily, researchers speculated on costs and conversions: "small owners may convert their land instead of managing it for timber production simply to avoid the cost of having a timber harvesting plan prepared by a professional" (Lundmark, 1975, p. 174). Vaux (1986) pointed to the increased cost of plan preparation and replanting but also emphasized the uncertainty and variability of costs, which depend on the plan-writing forester, ground conditions, timing, markets, stumpage prices, etc.

1.4) An Environmental Turning Point: 1980s to 1990s

The 1980s marked another shift in policy focus: “the formerly prevailing view, that limiting the amount of timber cut to the amount grown would be a sustainable practice, was replaced by a new construct in which ecological and social benefits would be given the same weight as economic returns” (Blumberg, 2008, p. 286). Through the early 1990s, the BOF adopted several rule packages including a formal cumulative impacts assessment, sustained yield planning, protections of late succession forest stands, and agency-mandated effectiveness monitoring (Duggan & Mueller, 2005).

Perhaps the most notable policy event in this era was actually a federal policy change, not a state policy change. While timber companies on the North Coast continued to clearcut old growth forests (Miles, 2018), scientists cited logging as the greatest threat to the Northern Spotted Owl (NSO)—a flagship bird species native to the old growth forests of the American west coast (Bonham, 2016). By 1990, the owl was listed as threatened under the federal Endangered Species Act, and logging on public lands largely fell out of favor with the general public (Widick, 2009). Environmentalists and the timber industry engaged in a public battle over rights to forestland, a time that would become known as the Timber Wars (Miles, 2018).

Although the federal listing of the NSO required protection measures on public and private lands, it especially raised issues within the private landowner community. It restricted harvesting within proximity to nesting sites and core habitat, eliminating thousands of acres from optimal logging ground on private lands, and established a standard protocol for annual NSO surveying (U.S. Fish and Wildlife Service, 1992). The

U.S. Forest Service was also constrained, and timber harvesting plummeted both on federal and private lands in California (Marcille et al., 2020).

Also in the 1990s, in response to many landowner challenges—like costs of THPs and annually changing FPRs—the BOF established a new permit called the Non-Industrial Timber Management Plan (NTMP) exclusively for non-industrial forest landowners holding less than 2,500 acres of timberland (Dicus & Delfino, 2003). This document served as a living harvest permit, one meant to remain with a property permanently and guide its forest harvests in perpetuity. It offered landowners a comparable, though often higher, price to a THP but allowed them to harvest timber using a notification rather than preparing an entirely new plan. Also, the FPRs published in the year of plan preparation apply to the plan in perpetuity. Landowners must follow changes to other statutes, but the FPRs remain constant for each plan (California Forest Practice Rules, 2021).

1.5) Today's Forest Policies: 2000s to Present

Today, the FPA and FPRs still serve as the backbone of the California forestry policy system. Several notable revisions have occurred within the last 20 years and still occur each year. For example, in 2009, the BOF adopted Anadromous Salmonid Protection (ASP) rules which increased streamside protections for large streams bearing salmon and trout species (California Department of Forestry and Fire Protection & California Department of Fish and Wildlife, 2014). The 2021 FPRs and FPA spans more than 350 pages (California Forest Practice Rules, 2021).

The FPRs implement the Z’Berg-Nejedly Forest Practice Act and include erosion control and watercourse protections (e.g., watercourse buffers restricting harvest activities near streams known as Watercourse and Lake Protection Zones, road construction limitations, log hauling limitations during the wet weather period); biological resource and wildlife habitat protections (e.g., standing dead tree retention, large woody debris retention, nest tree protection, specific protections for the certain bird species); silvicultural prescriptions (e.g., even-aged or uneven-aged harvesting methods); and cultural resource protections (e.g., avoiding or buffering prehistoric and historic archaeological sites) (California Forest Practice Rules, 2021). In addition, landowners are required to work with Registered Professional Foresters and Licensed Timber Operators on most commercial timber operations. All timber operations are permitted and reviewed by multiple state (and sometimes federal) agencies and are available for public review (California Forest Practice Rules, 2021).

METHODS

I used a qualitative approach to examine family forest landowners' perceptions of forestry regulation in California. Focusing on one state among 50 may seem limited, but single case studies allow for deep investigation into complex topics to illustrate variation from theoretical norms (Yin, 2018). I examine California as an extreme case study, "to highlight the most unusual variation in the phenomena under investigation" and explore "extreme outcomes, diverse solutions, and practices of case participants" ("Extreme Cases," 2012, p. 379) . I conducted semi-structured interviews with 33 active family forest landowners in California, those who have participated in California's regulatory forestry policy system. Themes and patterns emerged during iterative rounds of coding to define key takeaways from the data.

1) Semi-Structured Interviews with Family Forest Landowners

1.1) Interview Design and Participant Selection

I selected semi-structured interviews to collect data from landowners (Newing, 2010; Patton, 2002; Warren & Karner, 2015). The ordered nature of an interview guide provided topic consistency and response comparability among participants while the flexibility of open-ended responses provided for rich, and sometimes unforeseen, insight (McIntosh & Morse, 2015; Patton, 2002). This intensive interview method is commonly used to study lived experiences and subjective knowledge (O'Reilly & Dogra, 2018); thus, it is an excellent tool to investigate landowner perceptions (Bergstén et al., 2018;

Cook & Zhao, 2014; Creighton et al., 2019; Kauneckis & York, 2009; Quartuch & Beckley, 2013; Rouleau et al., 2016). The interview guide consisted of 13 questions designed to discuss participants' property management style and history; use and experience with specific policies; ability to achieve land management objectives; and perceptions of policy changes (Appendix C). These proposed methods were approved by the Cal Poly Humboldt Institutional Review Board (IRB #20-048).

I chose interview participants using purposive sampling, targeting subjects with specific characteristics to yield rich information relevant to the study (Emmel, 2013; Patton, 2002). I interviewed *active family forest landowners*, which I defined as individuals and families that currently own at least 10 acres of forested land and have participated in active forest management activities within the last 10 years. Such activities included but were not limited to commercial timber harvesting, timber stand improvement, fuels treatment, and road improvement. I selected landowners that specifically owned property in *counties where commercial timber harvesting occurs*, defined as counties that annually generate at least 0.1% of California's total commercial timber volume (Marcille et al., 2020). This may seem like a low threshold, but this definition ensured inclusivity of most family forest landowners who may actively manage their forests, even those located in areas less conducive to commercial harvesting. This pool of participants was likely to possess experience with and knowledge about California's state-level forest management practices, permits, and related policies.

To find participants who met these criteria, I utilized snowball sampling, a technique in which participants recommend additional qualified participants (Parker et

al., 2019; Patton, 2002). I began my search by contacting Forest Landowners of California (FLC), a private non-profit organization consisting mainly of family forest landowner members. FLC leaders recommended several members willing to participate. I also contacted consulting foresters who recommended willing clientele. I aimed to collect a diverse pool of participants with a range of ownership locations within my study area (i.e., counties where commercial timber harvesting occurs) and varied identifying characteristics, specifically gender, age, and property size.

1.2) Participant Interviews

Between October 2020 and July 2021, I conducted 25 confidential, semi-structured interview sessions with a total of 33 participants. Participants were initially contacted via email which included a description of the study, interview guide, and IRB-approved consent form stating researcher information, participant identity protection, risks and benefits, and the option for use of direct quotations. Due to COVID-19 restrictions, all interviews were conducted and recorded via phone or Zoom calls and ranged from 40 to 150 minutes in length. In some cases, I interviewed two participants at once—such as spouses, relatives, or business partners—who shared ownership. Each individual was assigned a unique identification number between 1 and 33. All consent forms and interview recordings were stored in a password-protected Google Drive. Each interview was transcribed verbatim by Landmark Associates, Inc. in preparation for analysis. Data collection concluded when response diversity was exhausted, and interviews yielded no novel responses.

I achieved participant diversity by county (Table 16). Participants owned forested properties within 15 counties (50% of the 30 total timber producing counties), from Del Norte along the Oregon border, to Fresno near the southern end of the Sierra Nevadas (Figure 11). Nearly half of the participants represented Humboldt and Shasta Counties, the top two timber volume-producing counties (Marcille et al., 2020).

Table 16. Interview Participants by County. Note that one participant owned land in two counties; thus, his participation was split in half.

County	Number of Participants
Amador	1
Calaveras	1
Del Norte	1
Fresno	4
Humboldt	8
Lassen	0.5
Mendocino	2
Modoc	1
Nevada	1
Plumas	0.5
Santa Cruz	2
Shasta	7
Siskiyou	2
Tehama	1
Trinity	1
Total	33

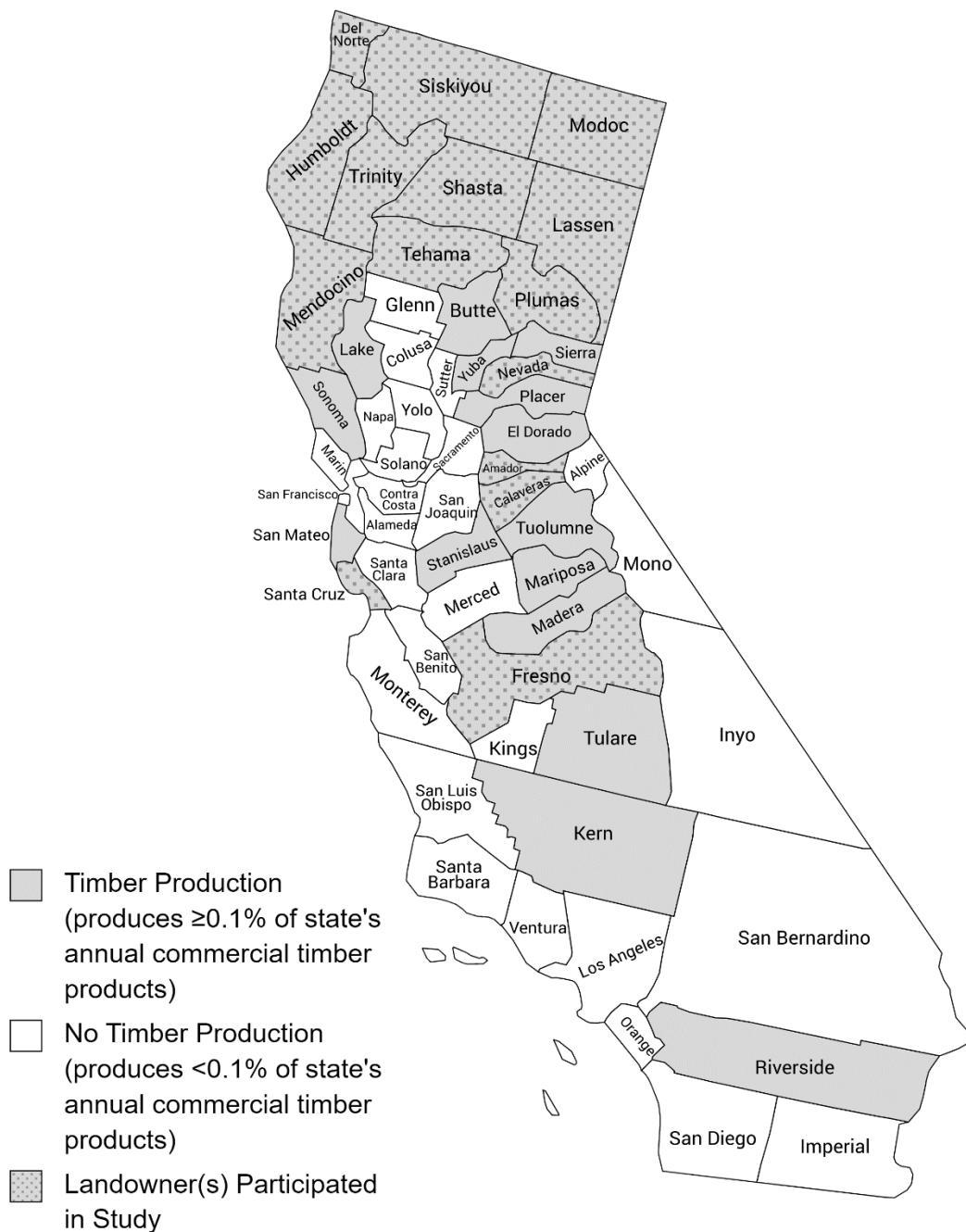


Figure 11. California Counties by Timber Production and Study Participation. This map depicts which counties produce commercial timber products in California (i.e., counties that produce ≥0.1% of the state's total annual commercial timber products) (Marcille et al., 2020). Counties with dots indicate counties in which landowner(s) participated in the study.

Participants also varied by gender, age, method of property acquisition, property size, and length of ownership (Table 17). Ten women and 22 men were interviewed and ranged in age from their 20s to their 80s. They owned properties ranging from 11 to 6,000 acres in size for a range of 0 to 45 years. In total, the participant pool represented 21,681 total acres of land, 18,633 of which were forested. Though not shared in (Table 17) interviewees also possessed a wide variety of professional backgrounds. Participants included current or retired full-time land managers, RPFs, loggers, CAL FIRE and California Department of Fish and Wildlife employees, engineers, an architect, a teacher, an artist, a hydrologist, an accountant, and others.

According to averages of quantitative characteristics and modes of qualitative characteristics, the average participant was a male in his 60s owning 657 acres of property (565 of which was forested) for at least 24 years. This description is very similar to the average California family forest landowner (owning 10 or more acres of forested land) according to the 2018 National Woodland Owner Survey results (Caputo & Butler, 2021); however, the participants' average property size was skewed much higher than the state average of 10-19 acres. Private landowners with larger properties (500 acres or more) are more likely to harvest their land and seek environmental improvements than smaller landowners, so larger land ownership size in the sample was expected (Ferranto et al., 2011, p. 184).

Table 17. Interview Participants by Identifying Characteristics. Note that joint landowners interviewed together, representing the same acreage.

Interview #	Participant #	Gender	Age (Yr)	Property Acquisition (Inheritance/Gift, Purchased, Both)	Size of Total Ownership (ac)	Percent of Ownership Forested (%)	Length of Ownership (Yr)
1	1	F	70s	Both	3000	100	30
2	2	F	60s	Purchase	5000	69	45
	3	M	60s	Both			45
3	4	F	60s	Both	400	68	20
	5	F	20s	Purchase			2
4	6	M	60s	Purchase	818	100	20
	7	F	60s	Purchase			20
5	8	F	60s	Purchase	52	100	8
	9	M	60s	Purchase			8
6	10	M	70s	Purchase	320	50	12
7	11	M	50s	Purchase	160	100	6
8	12	M	70s	Purchase	100	90	43
9	13	M	70s	Purchase	72	100	45
	14	F	70s	Purchase			45
10	15	F	70s	Purchase	160	100	17
11	16	M	70s	Purchase	90	100	20
12	17	F	70s	Purchase	200	80	36
13	18	F	20s	Inheritance/Gift	920	100	a
	19	M	80s	Inheritance/Gift			25
14	20	M	70s	Inheritance/Gift	6000	100	25
15	21	M	70s	Purchase	148	81	30
16	22	M	60s	Inheritance/Gift	2200	50	20
17	23	M	70s	Inheritance/Gift	260	92	5
18	24	M	60s	Inheritance/Gift	230	100	30
	25	M	50s	Inheritance/Gift			30
19	26	M	50s	Inheritance/Gift	217	100	7
20	27	M	70s	Both	320	100	Not stated
21	28	M	30s	Both	68	100	5
22	29	M	60s	Purchase	24	100	33
23	30	M	70s	Purchase	680	100	36
24	31	F	70s	Both	160	100	27
25	32	M	60s	Purchase	71	100	20
26	33	F	60s	Purchase	11	100	23

Interview #	Participant #	Gender	Age (Yr)	Property Acquisition (Inheritance/Gift, Purchased, Both)	Size of Total Ownership (ac)	Percent of Ownership Forested (%)	Length of Ownership (Yr)
Average Participant	M	60s		Purchase	657 ac	86%	24 yrs
Total Representation						21,681 ac	

^a This participant is not a legal landowner but is responsible for land management decisions about their family's land. Their input was deemed valid for this study, especially as a young landowner (an underrepresented demographic in this study).

2) Coding and Analysis

To interpret the interview data, I employed inductive analysis techniques (Patton, 2002). Using grounded theory, I derived themes, patterns, and categories from the texts to build an analytic framework (Charmaz, 2014). I began this process with a hardcopy cursory review of each transcript, noting general observations and summarizing participant characteristics and views at the end. This initial review helped me to gauge the range of responses and draft a list of preliminary codes. Then, each transcript was uploaded into a coding program called Dedoose and underwent open coding, or a more systematic process of sorting and marking data to identify key concepts (Patton, 2002; York, 2020). Once all transcripts were open coded, I reviewed the codes to further organize and condense them. The process concluded when the codebook reached saturation—when no new codes emerged (Charmaz, 2014; York, 2020)—and themes were comprehensive yet distinct (Kaarbo & Beasley, 1999; Patton, 2002).

3) Limitations of the Study

There were multiple limitations to this study that should be considered. For example, though I strived for geographic diversity among participants, the participant pool did not include family forest landowners from every timber-productive county in California. Some relevant geography was not sampled. Though information about racial identity was not discussed during the interviews, nearly all participants appeared white. Minorities, such as people of color, tribal members, or members of the LGTBQ+ community, did not seem well represented. Finally, I intended to interview participants in-person on their land to capture their sense of place, but COVID-19 restrictions required that all interviews be conducted over the phone or on Zoom. As an alternative, I included a photo gallery displaying images of participant properties to attempt to share the sense of place (Appendix D).

RESULTS

Interviews with research participants revealed the key roles of family forest landowners within California's landscapes, their complex opinions of their regulatory policy environment, and their experiences navigating the forest policy system to meet their forest management objectives. This section explores why landowners manage their lands, what they manage for, and how they manage them under the state's regulatory framework. Participants generally viewed state forest policies as necessary regulations geared more toward the protection of public trust resources than protection of private property rights. Nearly all participants found success navigating the policy system though not without various challenges. They also identified constraints and opportunities that impacted their progress within the California regulatory framework.

1) Passion for Land: Family Forest Landowners' Attachment to Land

Land is really emotional. I don't know if it should be, but it just is. If it wasn't emotional, then you wouldn't be passionate [about it.] (#28)

In speaking with landowners, it became clear that understanding their perspectives begins with understanding the foundational values they hold for their land and *why* they manage it. Participants expressed a range of feelings as they described their connection to their properties. Some landowners considered their land to be a part of their identity and sense of self. This closeness between landowner and land was evident in the stories told by interviewees, which prompted tears, laughter, and smiles. One participant

shared that her spouse's ashes were scattered among the last seedlings he planted, as he requested to forever remain a part of the land he loved.

Of the 33 participants, 21 of them used the word "love" when describing their land and their attachments to the land. They also used words like "precious" (#22, 31), "treasure" (#13, 14, 21, 22) and "cherish" (#22), signifying great appreciation. Participants expressed feelings of gratitude, describing land ownership less like a right and more like a gift. Both participants who inherited land and landowners who purchased land used words like "privilege" (#4), "opportunity" (#28), and "blessing" (#18) to describe their ownerships.

Several participants noted that land ownership, by nature, can be a "personal" (#20, 23) topic and one that connotes individuality and pride. When asked what they value most about their land, multiple participants responded simply, "it's mine" (#17, #29). A few identified this specific feeling as "pride of ownership" (#8, 9, 12).

Landowners expressed value in the exclusivity that comes with holding a special space on the landscape that belongs to them alone. One participant even made the following analogy when describing his land ownership:

when someone...invite[s] you out to their property. It's like inviting you into their house; but, when they start to ask you to cut trees, it's more like inviting you into their bedroom. It's a very intimate [topic.] (#20)

Participants reported holding value in their ability to make personal decisions about their land, not just to fulfill individual desires but also to "do...what's right for the land" (#12).

Satisfaction was another emotion that emerged frequently during the interviews. In fact, when participants were asked directly, "what do you want the study audience to

know about your experience as a family forest landowner,” most of them gave similar responses: they wanted others to know that land ownership is “satisfying” (#6, 24, 31), “rewarding” (#12, 19, 20, 29, 33), “fulfilling” (#12), and “worth it” (#12, 15, 23). Nearly all participants said that land ownership comes with some degree of hard work. For the most part, participants said that they enjoyed this work, describing it as a “labor of love” (#6, #20), a “life’s work that you dedicate yourself to” (#19), and an “accomplishment” (#27). Landowners stated that they want people to know that it takes effort to create a space they are proud of. Participants noted that the land also gives back to them: “it’s taught me a lot of life lessons” (#25).

Some participants described the land as “a part of you” (#28) and something that has influenced their identity and lifestyle. The theme of ownership as identity was consistent across both participants who inherited land as well as participants who purchased land. For those who inherited their properties, this connection often stemmed from childhood experiences on the land or in similar outdoor settings. Some participants noted that their identity with their land shaped their job: “[My] experience as a kid on the land...definitely shaped me wanting to continue my education and career in natural resources” (#5). Others noted that their job on the land shaped their identity with the land: “People tend to take their job, whatever it is, and that's who they become. So, really, the land is who I have become over my lifetime” (#3).

Overall, participants revealed attachment to their lands, a theme central to their roles on the landscape and within California’s forest policy system. Landowners shared that ownership could bring “delight” (#30)—in a job well done, in sharing space with family,

in connecting with nature—but also “heartbreak” (#28)—watching it burn in a wildfire or navigating family disputes. Participants indicated that the way they feel about their land influenced how they’ve chosen to manage it. This was especially apparent when asking landowners directly about what they wanted to tell a greater audience about being a family forest landowner. Given this opportunity, participants chose to talk about their attachments to the land, not about their perceptions of policy. In this way, it seemed more important to landowners to express *why* they do what they do, not *how*.

2) “It’s on Us:” Family Forest Landowners’ Role on the Landscape

It’s on us... I feel kind of like a steward of [the land]. I feel like trying to keep it together is valuable for everybody, not just me, but for wildlife habitat and such. I am just the lucky one who gets to be in charge. (#4)

When asked to describe their roles on their properties, participants most commonly viewed themselves as “stewards,” (#27, 28, 32), “custodians” (#19), “caretakers” (#12, 16), and “trustees” (#21) of their land. They expressed a noticeable sense of responsibility to maintain their properties:

It’s up to me to protect the property. (#29)

It’s our job to care for the land. (#5)

Our goal...is to leave it in better shape than what it was when we got it. (#9)

Participants said that they “try...to do the right thing” (#16) and “do what [they] can with what [they] have” (#28) to “protect,” (#22, 29, 30), “respect” (#27), and “enhance” (#2, 30) their forests. Participants further characterized their stewardship role by describing two different motivations for stewardship: “You’re trying to protect [your forests] both

for public benefit...but also for the family that owns them" (#1). They indicated that both the legacy of the land itself and the legacy of their families were important.

2.1) Land Legacy

Several interviewees were motivated to manage their properties to continue the legacy of the land. This was often explained using a multi-generational perspective. They stated that ownership is temporary, so landowners should do their best to care for the land now in hope of maintaining it into the future.

We're here for just a microsecond of time. Yet, we have the ability to make an impact on it...I am a custodian of the land. I do not own the land. The land, itself, will far exceed my lifetime. I do not have the right...to utilize it in any way that I want. (#19)

The difficulty with protecting landscapes is that they last so much longer than human lifespans. (#1)

We're not owners, we're renters. We're caretakers of the property. (#12)

Participants described themselves as small players in the greater picture of the landscape, yet they felt the need to do their part over their lifetimes for the greater good of the land in perpetuity.

When landowners described their role as land stewards, they often indicated that they saw themselves as good stewards and that they have done and still do a good job of caring for their land. Some voiced that their presence on the land ultimately added value to it.

I think there's a definite potential advantage to having conscientious forest landowners living on their land. (#30)

I think...landowners... who make their livelihood either economically, or just for their own personal pleasure on the land...they are the ones who are the most motivated to keep the best care of the land and biodiversity. (#11)

We already are doing everything we can for clean water, clean air, healthy forests. (#15)

Some interviewees indicated that their sense of duty to the land is innate, and their contributions to the land are beneficial.

To some extent, all participants indicated that responsible land stewardship involves active forest management, or periodic manipulation of natural resources on the land to ultimately sustain those resources. It was their belief that ongoing forest management activities—like intermittently harvesting timber, pre-commercially thinning stands, and reducing fuel loads—contribute to healthier, more resilient forest conditions and that it is in effect “a continuous job” (#33). Several participants shared that they acquired neglected or unmanaged lands in poor condition: “thickets of dense trees” (#9), “solid brush you couldn’t even walk [through]” (#32), “a moonscape” (#12) after a fire, which inspired them to take action. Landowners had this to say about active management:

The biggest objective is managing for resilience...and really get [the forest] thinned out. When you have this much acreage, it’s a full-time gig—it never ends because the forest is a renewable resource. (#19)

Our top concern is our ability to extract that resource in such a way that does not cause long lasting detriment to the resource, but rather is active management that helps enhance it. (#2)

The worst thing I ever did here was nothing. (#8)

We’ve gotta do more. Doing less is not the answer in the situation we’re in; it’s doing more, and doing more sensibly. (#28)

One participant shared a success story of how her entire property and those of her neighbors were “saved because of [recent] CFIP work” (#31), or cost-share forest activities performed under the California Forest Improvement Program (CFIP). The program began as the California Forest Improvement Act of 1978, a cost-share reimbursement program that reimbursed 75% to 90% of the cost of forest improvement activities including but not limited to site preparation, tree planting, tree protection, precommercial thinning and release, pruning, follow up, and other forestland conservation practices.

2.2) Family Legacy

Most participants, from fifth generation landowners who inherited historic properties to first generation owners who purchased their own, expressed their desire to someday transfer their ownerships to family members and viewed themselves as family legacy leavers. These landowners described family legacy as “pass[ing] on [land]” (#2, 4, 9, 13, 16, 21, 27), “generational succession” (#1), carrying on “family history” (#19, 31) and “tradition” (#16, 31), and “keep[ing] the forest working and in the family” (#1).

Several interviewees situated their stewardship roles within the long-term time horizon:

You're holding the trust of the past generations and interest for the future. We're here just for a little bit. The care of a landscape spans multiple generations. (#2)

[The land] wasn't really mine. It's just mine to pass on. (#4)

Some interviewees also noted that leaving a family legacy meant leaving land in better condition than they acquired it. They said that they strive to “minimize or start to repair

some of the damage that was done [by] earlier [owners]" (#23) and to "[pass] something on that has been enhanced under [their] timeframe and management" (#2).

For a few participants, their family legacies began generations before they were born. In fact, three landowners traced their family legacies on their properties back to the late 1800s, with the oldest established in 1872 (#19). One participant shared that in her family cabin on her property, "every child gets their height measured on a board in one of the bedrooms. We have 100 years of...every family member who's been there" (#31). These landowners represented fourth and fifth generations of owners who have introduced the sixth, and in one case seventh, generations to their lands. These landowners seemed especially obligated to pay it forward to the next generation, saying "[the land] was gifted to us, and we have that same dogma...it will transfer down to our kids" (#25).

Multiple participants noted that within their role of family legacy leaver was also their role of keeper of local knowledge, harboring historical and ecological information about their land. In some cases, this knowledge began in childhood: "I grew up here, and I know just about every square inch of this land, and it's something that's very important to me" (#3). Several participants who purchased their properties later in their lives also indicated how well they've come to learn their land, though some admitted they had even more to learn.

To these participants, passing their land to the next generation also meant passing their knowledge. As one interviewee stated, "I remember growing up, and my stepfather would say, 'I want you to watch what I'm doing,' and I say the same thing to my kids"

(#23). In this way, some landowners not only acquired knowledge personally but also generationally, passing down lessons learned previously from family or friends. Such information included notable land features (e.g., archaeological sites and historic family sites), historic land events (e.g., land sales), ecological events (e.g., wildfire, storms, floods), and wildlife trends (e.g., species diversity and abundance). For many landowners, this local and generational knowledge provided foundational and valuable context for making key forest management decisions for their land. In fact, 75% (22 of 33) participants indicated that they relied on themselves first and foremost to make key forest management decisions for their property, as opposed to their forester, logger, or other advisors. For example, one participant shared, “I evaluate my own land myself. I’ve been here for more than 20 years. You see it when you’re there” (#33). Another shared, “we prefer to do our own forest management. We work with an RPF because it’s required by law that we have one” (#19). These landowners considered themselves the leading experts on their land, and this feeling seemed to intensify with length of ownership: the longer the landowner had been on the land, the more they learned, and the more knowledge they gained to pass on to the next generation of forest managers.

A few interviewees were motivated to carry on a family legacy to “keep [family members] connected to each other” (#21) and hope “sharing land...[will] keep them tied to the land” (#5). Others said they were driven by fear of land transfer alternatives: “they’re gonna sell, they’re gonna subdivide, and you’re gonna lose that portion of your forest” (#8). For one participant, his worry for his family was simply, “I have no control over what they’re actually going to do” (#27). Participants voiced concern for the

potential end of the family legacy on the land but also for the consequences for the land, such as “fragmentation...[which] is not...to the public good” (#23). A few participants discussed the difficulties of maintaining a family legacy, saying “I know [our land] caused a lot of hardship in my mom's family” (#5) and, “we go from first generation of one owner to the current fifth generation...who...represent 15 owners. It gets complex to manage it” (#22). Some participants reported social, emotional, and financial struggles involved in ownership transitions.

3) Family Forest Landowner Objectives: What Do They Manage For?

In this section, I examine landowner objectives, or *what* landowners manage for. During the interviews, participants were asked to describe their land management objectives for their properties. They were not provided with suggested objective categories but allowed to provide their own responses. In Table 18, I summarize their responses and frequency of discussed objectives.

Table 18. Participant Forest Management Objectives. This table organizes the most common objectives expressed during interviews.

Objective	# of Participants (% of total)	Description of Objective (What do landowners manage for?)
Timber Growth & Production	32 (97%)	Participants managed their lands “produce timber on a sustainable basis” (#30). They managed for “big trees” (#8, 9, 24, 25, 31), “fast-growing trees” (#31), and “more board feet” (#10) using mostly “selection harvesting” (#24, 25) or “uneven-aged silviculture” (#19, 30). For 17 participants, this also included sanitation-salvage harvesting from damaged timberlands: “remov[ing] as many of the bug killed trees as we could” (#32), “eliminat[ing] insect infested trees [through] sanitation work” (#32), “fire salvage harvest[ing] to... take any value from the [burned] timber” (#11).
Hands-On Work	26 (79%)	Participants managed their lands for “the opportunity to work on [the land]” (#6) themselves. They valued their hands-on experiences on their properties; two described this work as “my therapy” (#28) and “what I love to do more than anything” (#20).
Family Legacy	25 (75%)	Participants managed their lands to “pass [them] on” (#2, 4, 9, 13, 16, 21, 27) to future generations. Most participants expressed this objective as “[selling] the [land’s] natural resources...to sustain itself in perpetuity for the family” (#22).
Residence or Seasonal Camping	24 (73%)	Participants managed their lands for permanent residences or seasonal vacation spots during the year. They described the land as a “home” (#1), “retreat” (#11), and a “pleasure place” (#22).
Plants & Wildlife	22 (67%)	Participants managed their lands for plant and wildlife wellbeing and habitat, which included “animals” (#15), “critters, and bugs” (#17), “indigenous flora and fauna” (#11), “bird

Objective	# of Participants (% of total)	Description of Objective (What do landowners manage for?)
		populations” (#10), “biodiversity” (#19), “wildlife enhancement (#31), “salmonid and wildlife [habitat] restoration” (#1), and “oak woodland restoration” (#2, 3, 10).
Aesthetics & Beauty	22 (67%)	Participants managed their lands for aesthetics, beauty, and the “look” of the landscape. They described their properties as “scenic” (#33), “fantastic” (#6), and “gorgeous” (#10), and strive to keep them looking nice: “we can create not only a sustainable forest, but we can also make a forest that looks good when we’re done” (#20).
Forest Health	19 (58%)	Participants managed their lands for “forest health” (#5, #22) and “healthy forests” (#1, 12, 28, 31) by promoting, maintaining, and enhancing “best trees” (#17), “[tree] species composition” (#4), and timber stand resilience to wildfire (#4, 11, 16, 19, 22, 28), insect/beetle “infestation” (#11, 21, 32), and “drought” (#19, 30, 31, 33).
Privacy/Peace	18 (55%)	Participants manage their lands for “privacy” (#14, 33), “seclusion” (#10), “tranquility” (#11), “peace” (#15), and “quiet” (#16, 31).
Fire Prevention	18 (55%)	Participants managed their lands for “fire suppression” (#22), “fire protection” (#29), resilience to wildfire (#4, 16, 19), and “reduc[tion of] the fire risk” (#8, 10, 26, 33). They used the following approaches to achieve this objective: “thin out” forest stands (#19), “control competing vegetation” (#16), “fuel reduction” or “fuel management” (#1, 22, 25, 31), and “reintroducing fire” (#24). There was frequent overlap between participants who managed for forest health and those who managed for fire prevention with 12 (36%) of the total participants explicitly managing for both.

Objective	# of Participants (% of total)	Description of Objective (What do landowners manage for?)
Recreation/Fun	15 (45%)	Participants manage their land for recreational purposes; they “have fun” (#6, 16, 29), “play” (#17, #29), “explore” (#21), “walk” (#8, 9, 15, 21, 30, 33), “hike” (#11), “swim” (#13, 14, 31), watch wildlife (# 8, 9, 13, 14, 31, 32), and even “cross-country ski” (#30) on their properties. Interestingly, no landowners directly noted hunting or fishing as recreational priorities.
Reforestation/ Post-Fire Recovery	14 (42%)	Participants manage their lands for reforestation, or “replant[ing]” (#11, 17, 31, 32) trees. This was a general objective for four participants but a top priority for the 10 participants who had properties impacted by wildfire in the last 5 years. For these post-fire property owners, this objective meant forest restoration and “clean up” (#13).
Water	7 (21%)	Participants manage their lands for “water quality” (#28) in “creeks” (#1), “streams” (#3), and “ponds” (#13, 33).
Soil	5 (15%)	Participants manage their lands for “soil health” (#4, 5) and “erosion” (#30).
Carbon	3 (9%)	Participants manage for “carbon sequestration” (#4, 5, 28).

A few key observations emerged as participants described their land ownership objectives. First, the participants described a wide range of goals for their land—from specific, on-the-ground objectives to protect forest resources, to experiential objectives tied to personal feelings. This spectrum showed that participants manage their lands for a plethora of reasons and reflected their diversity as landowners.

Second, the range and diversity of participants' objectives observed in this study generally mirrored objectives of California family forest landowners statewide, according to the National Woodland Owners (NWO) survey in 2018 (Butler et al., 2020). The (NWO) survey asked landowner respondents to rank the importance of 13 possible land management objectives. Among the survey respondents owning 100 acre or more (the group with characteristics most similar to participants in my research), the most important objectives were: beauty or scenery, wildlife, water resources, privacy, and passing land on to children. All of these objectives were reflected among participants in this study; however, their priorities differed from those of the greater landowner population. For example, the most common objective among participants in my research was timber growth and production; in the NWO survey, this objective (classified as "timber products") ranked extremely low, 12th out of the 13 possible objectives (Butler et al., 2020). This revealed that active family forest landowners may have different prerogatives than the state's family forest landowners as a whole. This also confirmed Ferranto et al.'s (2014) finding that landowners with larger properties, such as the participant pool, are more likely to list income generation as an objective.

Of the 33 participants, 32 indicated that they have in the past derived income from commercial timber sales on their land and/or wish to do so in the future. Most of these interviewees described this income as supplementary to their off-property occupations and endeavors, while a few—typically with larger holdings—relied on their land as their sole source of income, one participant harvesting timber every year (#1). Many participants made it clear that generating income from their land is less a personal goal

and more a tool—and sometimes a necessity—to maintain their ownership by reinvesting in it.

The income is not just to make income; it is just to help support [the land]...so we can preserve it. (#4)

It needs to produce in order for me to own it. The land needs to pay for itself. (#26)

I'm not gonna say that we don't enjoy periodic income off the ranch. That's important. We do stock a pretty significant part of that into an account that allows us to continue to do maintenance projects in between our harvest entries. (#24)

These participants indicated that as long as the property generates income, they could afford to keep it under their care, which ultimately benefited the land, not just themselves. Several participants also made it clear that their objective for growth and production did not supersede their overall objectives to maintain public trust resources.

It's not about making a profit...We're not in it for the money. We're in it for the ground. We're in it for the environment. (#8)

Our ultimate objective is to keep the land that we have in a way that is not too much of a financial burden on us, but we aren't willing to do that in any way that is harmful to water quality, soil health, forest health, and wildlife. (#4)

In fact, for some, timber sales were the linchpin needed to provide for public trust resources and amenity objectives, both financially and ecologically.

I think the bottom line is it [the land] has to be able to make us a living. We can talk about all kinds of really cool conservation practices and things we can improve...but if we don't have the dollar resources to do that, we can't do it at all. (#2)

Well, if you sum it up, you're really managing for the trees. Your wildlife...wildfire prevention...carbon sequestration...[and] water quality

is generally going to come with that. You do a good job of managing the trees, all those other things will follow along. (#16)

In some cases, income generated from harvest plans meant the difference between keeping land or selling land. In all cases, participants with goals to harvest timber pursued preparation of timber harvest plans or other forest management plans which record and monitor forest resources, some (in the case of the NTMPs) in perpetuity. In this way, prioritizing timber growth and production assisted participants in accomplishing their other land management objectives.

4) It's Complicated: Landowner Perceptions of Forest Policies

Participants used words such as “complex” (#1, 2, 3, 10, 31), “complicated” (#1, 17, 26, 30), “confus[ing]” (#28), “difficult” (#10, 18, 19, 20), and “frustrating” (#2, 3, 6, 7, 8, 9, 10, 11, 12, 16, 18, 19, 22, 23, 26, 28, 29, 30) to characterize California’s forestry policies; yet, most participants expressed general acceptance or support for these policies. In fact, only four interviewees (12%) voiced explicit opposition to current policies. Most participants discussed both positive and negative aspects of their policy environment. This study examined participant views of and interpretations of several specific aspects of the state’s regulatory system, stitching together a larger picture and more complete understanding of their policy perceptions. Interview questions about policy yielded a range of responses but communicated an interesting message: participants bristled under rigid regulations, but most indicated that these regulations are in place for good reason and work to protect shared resources.

4.1) Public Trust Resources vs. Private Property Rights

Evaluating participant views of California state-level forestry policy began with discussions about the balance between a state's responsibility to protect public trust resources and a landowner's right to manage their private land. Participants were given brief definitions of public trust resources (i.e., resources that benefit society as a whole, like clean water, clean air, healthy forests, biodiversity, etc.) and private property rights (i.e., inherent rights of a landowner). When asked if they thought state-level forestry policies do a good job of protecting public trust resources, participants offered mixed opinions; 17 agreed that the policies are effective, 13 disagreed, and three opted for answers somewhere in the middle (Table 19). This proved to be a difficult question for participants, and most offered a thoughtful explanation beyond a simple "yes" or "no." Some justified aloud both sides of the question before formulating their final answer.

Table 19. Participants Responses: Do state-level forestry policies do a good job of protecting public trust resources? The following sample quotations are illustrative of response diversity and not comprehensive of all participant responses.

Yes (17 participants)	Somewhat/Ambiguous (3 participants)	No (13 participants)
"I think they do a very good job of protecting public resources. I think the whole construct—from the planning document to the licensing of LTOs and RPFs—is built on resource protection." (#24)	"Overall, I think that the policies have done somewhat of a good job." (#18) "[It] depends on the given day or the given circumstance. On a letter grade scale A to F, I'd probably give them C+"	"I think that [state-level policies are] really doing a horrible job...There are...properties that are being left unmanaged because the rules and regulations in the State of California are so over the top that landowners

Yes (17 participants)	Somewhat/Ambiguous (3 participants)	No (13 participants)
<p>“On paper, yes...I would say it depends on a case-by-case basis, but I’d say if the forest practice rules are enforced the way they’re written...and people adhered to the intent...of what the forest practice rules represent, I would say it probably does a pretty good job of protecting the public trust resources.” (#20)</p> <p>“I think they do better than many other states.” (#33)</p> <p>“I think they do and sometimes to the detriment of the landowner.” (#12)</p> <p>“They do a good job of protecting those resources, but I contend that those resources would be protected anyway because private landowners want that stuff to begin with...They’re gonna protect it...I don’t know of any landowner that goes out and just tries to shoot the spotted owl or to dig up the salamanders or disrupt water quality.</p>	<p>to B-. They’re okay. You have the basic framework.” (#16)</p> <p>“I think the state resources do a good job of looking like they are working to protect biodiversity, but I think they do so with massive waste of funds and energy.”(#1)</p>	<p>cannot afford to navigate those waters.” (#23)</p> <p>“No. Our resources are too regulated. It’s too much. Our hands are tied for the most part. We already are doing everything we can for clean water, clean air, healthy—we’re not having healthy forests with all of these restrictions.” (#15)</p> <p>“Not really because...the California forestry policies in my mind have been emphasizing fire control not fuel reduction. I don’t think they’re doing a good job protecting the resources, because we can get a massive fire and it’s entirely destroyed... I don’t think that the California forest policies have their priorities correct at the moment.” (#31)</p> <p>“Maybe. Probably not...there’s these regulations that say you should do this, you can’t do that. If you looked at any one policy, it would probably sound</p>

Yes (17 participants)	Somewhat/Ambiguous (3 participants)	No (13 participants)
They all like those things.” (#29)		reasonable. I think I'm of the opinion that if you look at the policies in total, they don't really holistically combine in the best way possible.” (#11)

Dissenting opinions mostly focused on the belief that current policies are so restrictive that they hinder forest management activities necessary to maintain environmental integrity. Participants who thought policies are effective and those who did not pointed out that there was a difference between the intent of the policies and the outcomes of those policies; to some participants, regulations written in a book did not guarantee practices implemented on the ground. Participants with positive and negative responses also mentioned negative policy consequences for land management, such as added costs, wasted time, and inflexibility.

Interviewees were then asked: do state-level forestry policies do a good job of respecting private property rights? Again, participants provided mixed opinions, which were split even more equally (Table 20). Slightly more (16) participants voiced opinions that policies do not fully respect landowner rights and pointed to over-regulation as the primary issue. One of these participants even laughed when he answered this question and found it comical that “respect” and “private property rights” occupied the same sentence. Participants that offered negative responses said that the state’s ability to regulate private forest management comes at a cost to the landowner, “prohibit[ing them]

from having full access to their land" (#11). On the other hand, 13 participants shared that they did not think that state regulation impeded their rights and that such regulations acted in the best interest of the public and the land. Four participants did not offer strong feelings either way.

Table 20. Participants Responses: Do state-level forestry policies do a good job of respecting private property rights? The following sample quotations are illustrative of response diversity and not comprehensive of all participant responses.

Yes (13 participants)	Somewhat/Ambiguous (4 participants)	No (16 participants)
<p>"Well, I think they do. To some extent, [landowners] can do a lot of damage to their property because of what they don't know." (#32)</p> <p>"I would like to think so...because I don't think we need to be skidding logs across creeks and rivers and plugging up drainages." (13)</p> <p>"Well, so far, yeah, but it may change." (#15)</p> <p>"They don't bother me...They've got an obligation to the common good. I feel like it's part of the common good." (#21)</p>	<p>"I'm not sure about that" (#6, #7 agreed in same interview)</p> <p>"There are [policies] we don't even know about...they are really restrictive. The NTMP comes with lots and lots of restrictions. So I guess that maybe isn't taken into account sometimes." (#4, #5 agreed in same interview)</p>	<p>"No, they're more leaning towards the environment than rights...You can't do anything without [the state's] approval." (#27)</p> <p>"No. Haha!...I think California is pretty damn busy telling you what you can do and what you can't do with your property that you have to pay taxes for and you have to pay a mortgage on...Some of those things aren't bad, but I think that we've gone way overboard." (#3)</p> <p>"I don't have any private property rights as far as the forest goes. Once I...commit to an NTMP and managing our forest for the long-term as a sustainable forest under all those regulations, why do I need</p>

Yes (13 participants)	Somewhat/Ambiguous (4 participants)	No (16 participants)
		<p>to do anything in the future?...Why does everybody have to look over your shoulder every time you do anything?...I don't understand it." (#10)</p> <p>"I think that some of these rules, especially the watercourse cohort...[that] put buffers on what you can take out of it. Well, we're not compensated for that. They tell us what we can do, and it's basically taking the personal property without restitution. I know the purpose for it, I know the reason for it, but I think that the landowner carries the burden." (#12)</p> <p>"No, and that's probably one of the reasons I don't have a NTMP or a harvest plan on the property right now cause I don't want those public servants coming on my property any time they feel like they can...You sign away your property rights, so to speak, to get [your] harvest plan." (#29)</p>

A majority of participants recognized that there is a "trade off" (#4) between public and private interests. Most of them were of the opinion that California policies

effectively protect public trust resources on private property but often at the expense of the private landowner. Some participants indicated that entering into a state permitting process guided landowners down a narrow path that reduced access to their land's resources and their options for forest management.

Table 21 shows that most participants had definitive attitudes about public trust resources and private property rights, with only a few falling in the middle. When their responses to the two questions were combined, it showed an almost even split between those who found the policies to protect both public trust resources and private property rights, those who felt the balance was weighted in favor of public trust resources, and those who found the policies lacking in regard to both sides. Few participants felt that the policies were weighted in favor of private property rights. These results demonstrated the diversity in landowners' collective opinions.

Table 21. Protection of Public Trust Resources vs. Private Property Rights. This table compares participants' responses to show individuals' stances by number of individuals and percentage of total individuals (rounded to the nearest whole number).

	<u>Yes</u> , state-level forestry policies do a good job of respecting private property rights .	State-level forestry policies do a <u>somewhat</u> good job of respecting private property rights . (Ambiguous)	<u>No</u> , state-level forestry policies do <i>not</i> do a good job of respecting private property rights .
<u>Yes</u> , state-level forestry policies do a good job of protecting public trust resources .	8 (24%)	2 (6%)	7 (21%)
State-level forestry policies do a <u>somewhat</u> good job of protecting public trust resources . (Ambiguous)	2 (6%)	0 (0%)	1 (3%)
<u>No</u> , state-level forestry policies do <i>not</i> do a good job of protecting public trust resources .	3 (9%)	2 (6%)	8 (24%)

4.2) “Our Regulations Have Been Earned:” Landowners Understand the Need for Regulation

In California there's a lot of environmental regulation, which has been earned. There was a lot of misuse of land in the past, land just for pure profit. (#28)

As I said, in my career, the reason we have regulations is usually because of some abuse that occurred. If people were more responsible, we wouldn't have to do these things. (#22)

Several participants have navigated California's modern forestry policies since their inception in 1973 and offered long-term perspectives on forest practices, including

their environmental impacts. These were foresters, loggers, and other rural landowners who witnessed, and in some cases, participated in the less restrictive timber harvesting and road building strategies common in the 1950s and 1960s. They provided spirited accounts of those times.

They [industrial timber companies] hammered it. Their tractors were running up and down the stream bed...At the bottom of the creek, there was just this big mound of eroded material that washed down the creek. It was horrible. I saw the worst of it, then. That was right as the Forest Practice Rules were taking effect. (#30)

When I think back as a kid, following my dad [a logger] around, some of the logging that was going on then was just ugly. Some of these creeks were just running mud. They were moving logs across them and doing' everything else. (#13)

I've had the advantage of seeing the results of our logging over 70 years. In some parts of the forest, I thought a bomb had gone off. You wouldn't know the difference. (#22)

These experienced landowners all recognized environmental disturbances caused by "unacceptable" (#22) past practices, which eventually led to modern forestry policies. They indicated that the negative impacts of past harvesting practices, like excessive erosion and poor water quality, justified the introduction of modern regulations. In this way, California forestry "earned" its regulatory policy environment.

I grew up in the heart of the redwoods...Every year, in the '50s and the '60s, once it started raining in October, the Eel River would stay muddy. The sediment loads during the winter were just incredible...I've noticed over the years that now it doesn't take long at all to clear up, and the sediment load is much less. I don't know if that is the Forest Practices Act as much as the less logging that's going on, but probably they both in conjunction have contributed to that less sediment loads. (#12)

Although a majority of interviewees complained about the regulations in some way, a majority also agreed that they were necessary to help ensure the integrity of forest resources.

5) “Yes, But:” The Policy System Works, But Landowner Success Comes with Caveats

One way to evaluate the efficacy of California’s forestry policy system is by understanding landowner success within the system. Success can be measured by asking how well landowners are able to accomplish their land management objectives using the system. Participants were asked directly whether or not they were able to achieve their objectives within the policy system.

Of the 33 participants, 31 (94%) reported that they have been able to achieve their forest management objectives (as listed in Table 18) within California’s forest policy system; but, these success stories were typically accompanied by an explanation of the challenges they faced while navigating the policy system (Table 22). Six participants reported their success with a straightforward “yes,” without elaboration. The overwhelming majority of participants (25, or 76%) also answered “yes” and volunteered some kind of explanation or caveat for their success, i.e. “yes, but.” Only two interviewees responded with a simple “no” and also offered explanations for their issues, as prompted.

Table 22. Participants Responses: Are you generally able to accomplish your objectives within California's current policy system? If not, what kinds of changes would help you better achieve your objectives? Quotations listed under "Yes" and "No" are comprehensive of all participant responses, but the sample quotations under "Yes, but" are illustrative of response diversity and not comprehensive.

Yes (6 participants)	"Yes, but" (25 participants)	No (2 participants)
<p>"I think so." (#4, #5 agreed in the same interview)</p> <p>"[My] answer is yes. I have been able to do what I want with my land under our current policies." (#11)</p> <p>"Yes." (#12)</p> <p>"Yes...If it wasn't such a one-size-fit-all, I think it would be better." (#20)</p> <p>"Oh, I think so. I don't think there's any problem there. It's a matter of doing the work now." (#32)</p>	<p>"Generally we've been able to accomplish our objectives, but you certainly have to be knowledgeable and it's going to cost you money." (#3)</p> <p>"Yes, we can, but not without an enormous amount of time and effort and savings that we are able to get to that point." (#6)</p> <p>"In order to pay for my objectives, it just means I have to cut more trees. I'm going to accomplish them...but it's getting harder...and more expensive." (#23)</p> <p>"Basically, we're able to accomplish our objectives, but sometimes not as fast...I would love the system to be more flexible [with] shorter turnaround time for decisions on permits and policies and other programs." (#31)</p> <p>"Since we're under a Non-industrial Timber</p>	<p>"No, because I would like to harvest more trees using Exemptions." (#27)</p> <p>"I guess not because while I was working so hard to get this [cost-share] project pushed through, I could've done a lot to slow down high-intensity fire...I should've been doing that work...[instead of] waiting to do that work." (#28)</p>

Yes (6 participants)	“Yes, but” (25 participants)	No (2 participants)
	<p>Management Plan, yes. When you write a Non-industrial Timber Management Plan, essentially, you're under the rules for that year that your plan was approved.” (#9)</p> <p>“I think because of [our forester] and our partnership with our neighbors...I think we're good to go.” (#10)</p> <p>“I'm 77. I feel like I'd accomplish it unless I die sooner. [If] the grandchildren said, ‘Well, we don't care about that. Let's just sell all that.’ Then I wouldn't have accomplished it. Otherwise, I'm optimistic that I'll get it done.” (#21)</p> <p>“Yeah, I could accomplish them under the current system if I wanted to...but I can't do that without going through a bunch of hoops and incurring a lot of expense. It's possible, but it's hard...Part of it is the unknown factor.” (#29)</p>	

6) Policy Challenges: What Does Not Work Well for Landowners?

Nearly all participants reported successful experiences navigating California's regulatory forestry policies to achieve their objectives; yet, most of them identified aspects of policies that did not work well for them. These challenges included financial and non-financial costs to the landowners, a frequently-changing regulatory environment, and inconsistencies and uncertainties in policy enforcement.

6.1) Costs to Landowners

It boils down to cost. All of a sudden, it costs a lot to get that document [timber harvest plan] before you ever cut anything...Landowners are...hav[ing] to cut heavier than what they wanna cut just to help pay for their expenses. In time, we're gonna squeeze 'em out until it's just too expensive to [harvest]. (#9)

The most noted issue among participants was the costs, both financial and non-financial, of active forest management using the state-level forest policy system. Of the 33 participants, 30 (91%) cited cost as a concern or a limiting factor when managing their forests. These were not direct costs required by the state-level permitting process (i.e., permits fees), but rather various indirect costs necessary to enter into and successfully navigate the permitting process. As a few landowners mentioned, “not only is there a monetary cost associated with it [forest management], but there's time and energy costs associated with all the management that we do” (#2).

Generally, participants noted a variety of costs that were associated with either: 1) plan development (preparation of a timber harvest plan or other guiding document), or 2) plan execution (timber harvest operations or implementation of other forest management activities on the ground). Although some participants highlighted the high costs of

logging operations, including payment to licensed timber operators (LTOs) (#12, 28, 29, 32) and log transport (#12, 29), most interviewees focused their discussion on the costs of the harvest plans themselves (#1, 2, 8, 16, 24, 26, 27).

Participants mainly took issue with the growing total cost of preparing a harvest plan and the upfront nature of these costs. One participant recalled that in the 1970s, “a timber harvest plan might have been very few pages” (#1); these simple plans required less preparation, and thus, less expenses. Some interviewees shared the total costs of their own NTMPs or THPs (all prepared within the last 30 years) which ranged from \$12,000 to \$50,000. For many participants, this total cost included timber inventory (#9, 16, 25), “hooting” or Northern Spotted Owl surveys (#1, 2, 3, 4, 5, 6, 7, 12, 17, 24, 25), “botanical surveys” (1, 16), other biological and cultural surveys (#12, 17, 18), and road maintenance (#31), all performed by RPF(s) and other professional contractors. For multiple interviewees, these numerous costs added up quickly, especially when paid out-of-pocket prior to receipt of timber harvest income. One participant explained, “you have to pay for the THP upfront...and hope that your project sells for enough to cover that cost plus whatever else you wanted to do or what your objectives were” (#26). Two participants described their financial strain as “treading water to stay afloat” (#4) and feeling “strapped for cash” (#31); one even “put [her] house on the market” (#15) to cover her forest management expenses.

Most participants with NTMPs and THPs were able to recover these costs and profit to some degree from timber sale revenue, but this wasn’t always the case. Shrinking mill infrastructure, fluctuating log sale prices, contractor availability, forest

health issues, and new resource detections (like Northern Spotted Owls) impacted some participants' total cost recovery and made some planned harvests "barely worth it" (#29) or infeasible:

We were unable to get approval for that timber harvest in a timely manner before the drought hit, the beetles hit, and the market fell out of the timber...It was gonna be \$60,000 in income to us. By the time it got approved, it was less than \$10,000. (#31)

Back in 1994, I did do a harvest plan on the property....We bought the property [to] be college money for the kids, but it didn't really turn out that way. Timber harvesting got to be so crazy as far as permits and stuff and...we just didn't do it. (#29)\$500 per thousand [board feet] for Doug fir. That's about what the trucking costs alone. With the logging and trucking, it's nothing. I mean, there's no value to logging my 100-acres. (#12)

Even if landowners netted a high return in one year, "forests are a long-term game with lots of years without income for most people" (#1). For some, commercial timber harvesting is an expensive process that results in disproportionate profit margins.

In short, most interviewees associated additional forest regulations with additional landowner costs, some of which are not always recovered after harvesting. Interviewees noted that many recently introduced regulations focused on non-timber resources (e.g., wildlife, plants, archeological sites) overseen by multiple state agencies. As one participant framed the issue, "each agency gets its bite, and every single bite is going to cost us money" (#3). Many participants believed that each introduced regulation—like the new listing of a wildlife species under the federal or state Endangered Species Acts—added new parameters and protocols to their plan (e.g., species observation research, surveys in the field, seasonal monitoring practices, etc.) and intensified agency review

and investigation; ultimately, this increased time on the clock for RPFs and other contractors and increased the bills for landowners. As one participant stated, “a single regulation or a guideline might sound just fine, but when you begin to layer them on top of each other, one after the other,” changes to the plans and associated costs “can become untenable” (#11).

Twenty-three (or 70% of) participants had used CFIP at some point during their ownership to help offset costs of non-commercial forest management activities. Most participants reported positive experiences with CFIP; but, some ran into financial difficulties in timing and program stability. Even though the state partially reimbursed landowners for the cost of activities—in one case up to 90% (#13)—participants were still responsible for initial payments; one participant said, “some of my reimbursements took a really long time, like 10 or 11 months, to come back, when they were supposed to be [received within several] weeks” (#11). Another interviewee noted that, “it can be frustrating at times because...they [CFIP] don't have regular funding” (#30). With fluctuating funding, some landowners said they spent time and money planning ahead for a program that wasn’t available the next year, causing financial stress and delays in meeting forest management goals.

6.2) Ever-Changing Regulations

Another ongoing challenge for family forest landowners utilizing the policy system was frequent change to California’s forest policies. Some interviewees stated that the state’s Board of Forestry introduced new rule packages and amendments to the

CFPRs each year, a practice that has made the FPRs “much more complicated and voluminous” (#26) over the past 50 years. Participants described this issue in these ways:

Our rules are constantly changing. I’m not saying they’re always changing for the better...We’re changing ’em just because we think, “Well, we gotta change it.” (#9)

If there’s a big problem with [policies], it’s consistency. All the landowner...wants is consistency, and they wanna know that the rules are not gonna continually change [and]...that the yardstick is not being moved. (#20)

For these participants, it was not easy to stay up to date on additions and changes to regulations. Multiple participants expressed their efforts to stay abreast of policy changes—to “do your homework” (#15)—but felt that state-level policies changed so frequently that they struggled to keep up.

It’s very difficult not to be an outlaw, to tell you the truth, and do something on your property that seems minor that they [the agencies] may end up fining you over...I mean, it’s really, really hard to follow the letter exactly. (#12)

Everybody’s just confused and frustrated with all the regulations, what you can do, what you can’t do. (#28)

There's always new information coming out...So, it's very much a continuing story, is how I experience it...I just keep watching it like a soap opera that happens to impact me. (#1)

A few participants admitted that they learned new information about California’s forest policies by participating in this interview process with me.

These gaps in policy knowledge left room for uncertainty, which in itself stressed participants.

It’s the fear of, ‘Oh, my goodness, I forgot something,’ and they’re gonna tell me I can’t do something. (#22)

We have to live under that constant threat of, “Should I do this?” “Am I gonna get in trouble if I do that?” (#12)

That’s the real concern I have. There’s just a lot of stuff we don’t know. It’s always a challenge because...there’s some stuff we don’t know. We just have to live with the lack of knowing...Living with that anxiety is not an easy matter. (#21)

Some participants, even those who tried to stay attentive to policy changes, worried about the consequences of not keeping up with new rule changes.

Although several participants noted their frustration and concern about frequent changes in regulations, few participants have been personally impacted by these changes. When participants were asked to describe forest policy changes they had noticed over the course of their land ownership, 25 (or 76% of) participants were able to recount specific regulatory or policy issue changes; of these 25 participants, only 3 (or 12%) of them stated that policy changes directly affected their forest management decisions and actions. For example, one participant said that, “we had to upgrade all [our] culverts” (#20) following new road rules, which required changes to the timber management plan and increased cost of road expenses. Four participants noted indirect impacts of policy changes, specifically claiming that policy changes were ultimately responsible for many mill shutdowns, which “decrease[d] the number of outlets for our product” (#3). So, even though a majority of interviewees discussed policy changes, only a small percentage of them experienced personal repercussions from policy changes.

6.3) Policy Enforcement

Participants identified the multi-agency review process as an important part of the regulatory policy system, and one that often-raised issues, and consequences, as they navigated the system. They spoke extensively about the state agencies responsible for enforcing forest regulations—mainly CAL FIRE, California Department of Fish and Wildlife, and Regional Water Quality Control Boards—and the inconsistencies in their interpretations of the FPRs. One participant summed up this idea:

It isn't the regulations that create the problems. It's the implementation across all of the various state jurisdictions...Different agencies, even different regional entities within state agencies, are widely varied in their interpretation and their size of authority. That's what screws up the system and makes it grossly unfair to small timberland owners that don't have the economic punch to fight back. (#24)

Several participants noted that the regulations written in the FPRs were often interpreted to mean different things in practice and on the ground. Such inconsistency in regulation enforcement made agency review a “time-consuming and unpredictable process” (#26) for some participants. They attributed these varied interpretations to different locales, claiming, “the reviews are very different in different parts of the state” (#26). They also attributed inconsistencies to inspector inexperience, personalities, and personal preferences.

They [inspectors] come and go. Each new crop has to learn its way, but it does it at the expense of the landowners. That was a problem. (#26)

You get personalities and egos involved and...that's not good. It's unprofessional. (#20)

You're trying to do the right thing, but you never know what they're going to come up with 'cause they'll give you a different story the next time they're out there. (#8)

They [agency inspectors] come out there, and if they don't like what they're doing, you're in trouble. It may not have anything to do with regulations. It's just they don't like it. It looks bad. (#29)

Such subjectivity among regulatory interpretation also created a lack of trust and respect between some participants and their agency inspectors. Though multiple landowners claimed to have positive interactions with their state agencies, 18 (or 55% of) participants felt their interactions with agencies were problematic, describing them as “adversarial” (#6, 29, 32), “punitive” (#3, 12), “looking over your shoulder” (#10, 12), and “us-against-you” (#7). Some participants, some of whom were former state agency employees, felt that agency inspectors did not give them the benefit of the doubt. These types of encounters also bred feelings of disrespect: “they [agencies] act as if they know all the answers, and we [landowners] don’t know anything” (#31). Multiple interviewees reported feeling unseen or unconsidered during the review process; one participant even said, “they [agencies] don’t care about the landowner, and what his property is, and what it’s capable of. They just worry about protecting some obscure unknown resource” (#29).

Participants also noted the inflexibility of the agency review process: “My concern is...we've gone from a prescriptive program, where there was integrity and professionalism, to a regulatory program, top-down [with] no slack” (#16). Some landowners thought that the review process had become too by-the-book, without room for professional judgment or discretion to realistically meet a standard rather than being held to an impossible one in order to check a box on paper. They also felt that this

rigidity only went one way. Landowners were held to a strict timeline and penalized for tardiness or noncompliance, yet agencies were not held accountable for their mistakes or delays: “it’s frustrating for the landowner when they want to move forward, and they can’t...because the agency hasn’t followed through with what they’re supposed to do....The regulator has six months to come out and do that completion report...Well, if they miss their six-month deadline, you don’t get a pass” (#8).

Multiple interviewees noted the problematic disconnect between agency and landowner forest management objectives: “these other agencies...come in with blinders on, and they’re only seeing their portion of it. They’re only looking at the wildlife. They’re only looking at the water...In my experience, they’re not multiple use, which is what we’re going for” (#9). Some participants complained that agencies, though specialized by design, maintained too narrow a scope during review and did not consider the landscape impacts of timber operations or realistic solutions to meet multiple standards. In fact, a few participants noted a disconnect in objectives between agencies.

Everybody's got their turf that they want to protect, whether it's the Water Board, or CDFW, or CAL FIRE...They've got different objectives and different goals that, oftentimes, conflict with each other. (#16)

They all want input...but often along the way...they tend not to play together well. (#1)

In some cases, agency recommendations contradicted or were incompatible with other recommendations, further complicating the review process.

Again, for these landowners, issues with the agencies came down to costs: “they [the agencies] are not aware of the true costs of what they're asking. And, what they're asking,

depending on which reviewer you get, can differ a little bit; so, there's expense, and there's risk to the landowner in trying to meet the requirements" (#1).

Thus "lengthy and costly regulatory process for timber harvest plan reviews" is not a new issue in California (Center for Collaborative Policy, 2016, p. 2). In fact, in 2012, the state passed Assembly Bill 1492, establishing the Timber Regulation and Forest Restoration Fund, aspects of which "provide a funding stream via a one-percent assessment [tax] on lumber and engineered wood products sold at the retail level [to] seek transparency and efficiency improvement to the State's timber harvest regulation programs" (California Natural Resources Agency, 2015, p. A-1). As California's forest policy expert indicated in Chapter 1, the state typically responds to regulatory issues with additional regulations, and AB 1492 is a good example. In theory, this fund and subsequent program should have been beneficial to all private forest landowners, funding solutions to expedite forest practice review processes and reduce unnecessary costs. Though no participants specifically mentioned AB 1492 in their interviews, several indicated that multi-agency review has been problematic or getting worse. This may indicate that AB 1492 has not met its intentions. Perhaps creating more regulatory hoops to jump through may have added more burden than benefit to private landowners. In 2015, Sacramento State University's Center for Collaborative Policy conducted a qualitative assessment of AB 1492 using interviews with stakeholders and found that there was still "considerable concern among all interviewed about the ability of regulatory agencies to coordinate effectively and to engage a broad range of stakeholder interests" (Center for Collaborative Policy, 2016, p. 2). Stakeholders generally agreed

that an advisory committee was needed to better implement AB 1492. Outcomes of this legislation are still developing and serve as an example of California's response to forest policy inefficiencies.

7) Strategies for Success: What Works Well for Landowners?

In their discussions about navigating their regulatory environment, participants also identified aspects of the policy system that were “helpful” (#12, 13, 16, 23, 31, 32) and “beneficial” (#9, 18, 22, 24, 30, 31). In fact, several participants expressed overall positive feelings regarding policies:

I believe that the forest practice rules themselves in California, statewide, have been very well-vetted, are largely, though prescriptive, they are fairly clear, and they're able to be followed. (#24)

I'm a firm believer that our regulations in general have done good. I think there are certain things they do go overboard on, but overall, I think the regulations have been beneficial. (#9)

For the most part—they [policies] are there to protect our natural resources, and we appreciate that. (#5)

One frequently cited key to success was the NTMP. Multiple participants felt that they could not successfully meet their objectives without their NTMP. Of the 26 ownerships represented in this study, 15 have active NTMPs. Several participants noted the benefits of having an NTMP: this perpetual timber management plan provides “the security of having a permit in perpetuity” (#24) at “a level of management...that's not constantly changing” (#19) and allows owners the “flexibility” (#13) to “just give notice of operations...[rather than] filing for a timber THP every time” (#19).

Participants also attributed their success to their hired forest management practitioners: their RPFs and LTOs. Nearly all participants reported positive relationships with their contracted licensed professionals. Some of them emphasized a good “working relationships” (#21, 23) and “communicat[ion]” (#20, 30) with these practitioners helps to achieve objectives. Participants also valued their RPF’s role as an “expert” (#23) and a “[policy] interpreter” (#31). A couple of interviewees noted that “the most valuable assets are the loggers” (#20) because they are “the boots on the ground...[who] can really direct the way things go” (#23). Some participants are themselves RPFs and LTOs and can rely on their own expertise; however, nearly all of them said that they choose to consult with other licensed professionals on their own lands.

Others found success in continued self-education and policy knowledge. With such frequent changes to policies, landowners emphasized the need to “take advantage of any kind of education that comes our way” (#1), and “learn it” (#21). Twenty-three participants, or 70%, reported that they rely on professional and membership organizations for networking opportunities and information sharing, groups like American Tree Farm System (#1, 4, 5, 8, 9, 12, 13, 14, 15, 18, 19, 29), Forest Landowners of California (#1, 6, 7, 10, 13, 14, 15, 16, 17, 22, 23), Association of California Loggers (#6, 7, 13, 14), National Woodland Owners Association (#1, 12), California Licensed Foresters Association (#16, 26), and Society of American Foresters (#30). They also utilized information from the University of California Cooperative Extension (#1, 2, 3, 4, 5, 16) and other academic sources. Many landowners also

collected information socially through neighbors and friendships (#6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 24, 25, 30, 31, 33).

Some participants highlighted the importance of cooperation and teamwork with other landowners and entities to accomplish shared objectives. They noted that the rising costs of forest management were more affordable when they were split among stakeholders. Multiple interviewees reported success in working with neighboring landowners (#2, 3, 10, 31, 33), utilities (#31, 32), resource conservation districts (#12, 18, 19, 30), and fire safe councils (#12, #30) on timber harvesting plans, cost-share projects, and grant work. In fact, two participants attributed the survival of their forests through wildfire events to the work accomplished with their neighbors, work that was unaffordable alone.

Interviewees' final strategy for success was planning ahead and for the long-term, especially when it comes to finances. In their advice to other landowners, one participant emphasized being "prepared, because...there's a tremendous upfront cost...before you even cut anything on your property" (9). Although having "a big bank account" (#1) helps, participants emphasized the importance of "savings" (#7, 17) over time as well as "intergenerational succession" (#1) and "estate planning" (#8). Some participants indicated that "a mindset of always looking forward" (#2) can enhance landowner agility or ability to make quick decisions that could make the difference between a successful year and an unsuccessful one.

DISCUSSION

California's forestry policies, likely the most regulated in the U.S., had a reputation among family forest landowner participants as complicated to understand and difficult to navigate; yet, these landowners were generally able to accomplish their forest management objectives (e.g., to grow and harvest timber) within this regulatory environment and expressed widespread acceptance of these policies. As a group, these landowners act as important land stewards and key stakeholders within the state's forestlands, meaning the state and the public have a vested interest in understanding their perspectives, especially regarding forest policies that ensure sustainable use of the state's natural resources. In this section, I highlight California as an extreme case study to explore the policy perceptions of active family forest landowners in California. I begin with a discussion about the complexity of policy perceptions regarding public trust resources and private property rights. Then, I describe and explain discrepancies found between landowner acceptance and criticism of regulations, which revealed *uncertainty* as the most prominent challenge for landowners navigating the policy system. Finally, throughout my discussion, I identify additional research opportunities and apply lessons to a larger context.

1) Complex Perceptions of Private Property Rights and Public Trust Doctrine

When discussing how California's forest policies protect public trust resources and respect private property rights, participants' responses as a group superficially

resembled the tradeoff framework found in other literature. In total, 55 percent of participants said the policies do a good job of protecting public trust resources, and 49 percent said the policies do *not* do a good job of respecting private property rights. This general perception—implying that the policies favor public trust resources at the expense of private property rights—resembles the dialectic descriptions of public and private interests on privately-owned forests presented in several studies (Blumm, 2010; Byrne, 2012; Mortimer, 2008; Rodgers, 2009; Takacs, 2008; Vonhof, 2001). If government intervention on private lands equated to violation of private property rights, then “a regulatory approach on private land is irreconcilable with this view of property rights and set[s] up a trade-off between public and private rights” (Olive & McCune, 2017, p. 18-19).

However, when responses to both the public and private interest questions were compared in

Table 21 to examine individuals' policy stances, I found that public trust resources and private property rights were not mutually exclusive in the minds of my participants. In other words, participants expressed viewpoints that were more complicated than the public-private trade-off. Though a majority of participants said policies protected resources ("yes" response) and a majority said policies did not respect rights ("no" response), opinions were nearly equally split between the following stances rather than "yes-no" responses: *both* resources and rights were protected ("yes-yes" responses), *neither* resources nor rights were protected ("no-no" responses), and resources were protected but rights were not ("yes-no" responses). Most participants believed that policies were capable of serving, or not serving, both public and private interests without one precluding the other, which contradicted the trade-off model. The remaining participants (30%) expressed five additional combinations of responses, showing high variability and mirroring "the nuances and complexities of private ownership-public interests" found among private forest landowners in Bergstén et al. (2018). It seemed that these California active family forest landowners viewed public and private interests as "intrinsically linked" but envisioned the relationship between these entities more as blurred, ambiguous tension than a one-or-the-other trade-off (Bergstén et al., 2018, p. 808).

Further exploring interviewees' responses ("yes-yes," "yes-no," "no-yes," and "no-no") helped to define their policy perceptions (Figure 12). On one end of the spectrum, "yes-yes" respondents said that the policies effectively protected the resources they were intended to protect and also allowed private landowners to do what they

wanted to do on their land. These participants demonstrated strong satisfaction with, and optimism for, the policies because, from their perspective, the policies met both state and landowner objectives of land stewardship.

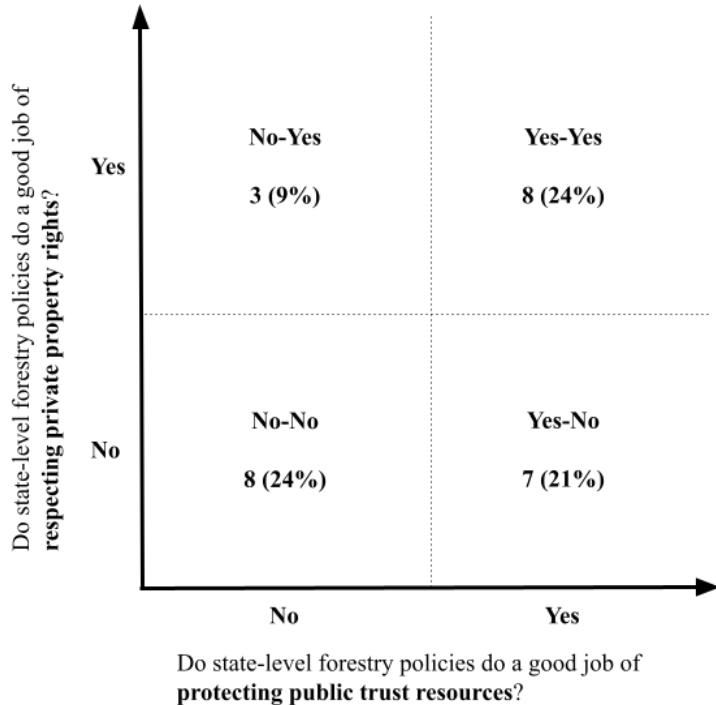


Figure 12. Diversity of Policy Perceptions. This graph compares the diversity and frequency of participants' policy perceptions based on their stances on public trust resources and private property rights.

“Yes-no” respondents also believed that the policies effectively protected resources but were too restrictive to allow private landowners to do everything they wanted to do on their land. These respondents agreed that the policies met their resource protection objectives but perhaps not in ways that landowners agreed with or saw fit for their own properties. Even though they thought policies favored the public’s interests

over the landowners', these participants were still satisfied with the policies because they did indeed protect resources, which was perceived as their shared goal.

The “*no-yes*” participants represented the least common stance and were of the opposite opinion: the policies did not effectively protect resources but allowed private landowners to do what they want to do on their land. From their perspective, the policies were manageable for landowners, but they missed their mark for resource protection. They drew a distinction between policies’ intentions in the FPRs and the policies’ effects on the ground, stating that just because the state intended to protect resources didn’t mean they actually protected them. In some ways, these respondents thought perhaps that they could do a better job of protecting their resources than the policies or did not trust the policymakers to make decisions better left to landowners with local knowledge. These participants were satisfied with their abilities to function within the policy system but were disappointed that the policies did not actually protect resources.

Finally, “*no-no*” respondents on the other extreme of the spectrum, took greatest issue with the policies, stating that the policies infringed on their rights and, consequently, the state’s ability to protect resources. Like the “*yes-no*” respondents, these participants argued that policies restricted landowners’ actions on their land, which may not only limit their ability to protect resources but counteract it. As one participant said, “it [the regulations] is so oppressive...It prevents you from doing the work. In the long run, I think all of these regulations and policies are just preventing forest management work from being done” (#29). Over-prescriptive policies might hinder landowners from being good land stewards, which might detract the state and landowners from achieving

their shared objectives. To these participants, if the policies restricted the rights of good land stewards and their ability to manage their land, then it was not possible to effectively protect resources without allowing for more landowner flexibility.

Some landowners who “act [as] good stewards of forestland without any intervening guidance from the government” may view “government regulation...as an unwanted interference with responsible land management, an infringement of private property rights, or even an affront to landowners’ ability to act as trustworthy stewards of the land” (Ward et al., 2018, p. 536). This may be especially true for landowners who did not believe the policies do a good job of protecting public trust resources and thought they could do it better. Landowners of the opinion “we own the land, we’ll protect it” may feel that regulations, in fact, limited their ability to do a good job of protecting public trust resources (Olive & McCune, 2017, p. 18). Such strongly contrasting stances also demonstrated the polarizing effect that regulations can have on private landowners, especially those who actively managed their lands to achieve economic objectives (Serbruyns & Luyssaert, 2006) and those with varied definitions of individual rights and obligations to their land (Rissman et al., 2017).

These findings provided context for additional research. The complexity of landowner policy perceptions makes them difficult to predict. One suggestion for additional research may include analyzing the participants’ quantitative aspects (e.g., gender, age, property acquisition, size of total ownership, and length of ownership, political affiliation) in regard to their public resources and private rights opinions to seek patterns or predictability. These findings may also spark further investigation of private

landowners and their relationship to property rights. As researchers continue to examine public resources and private rights opinions among groups of landowners, and they continue to yield results that do not fit the binary model, this may be an indicator of change within views and values of private property rights. Private property rights evolve over time (Freyfogle, 2003; Quartuch & Beckley, 2014) and may require closer study to recalibrate norms. Do private landowners' views and values of private property rights grow more complex as their regulatory environment grows more complex? I also see an opportunity to further explore participant perceptions of private property rights across various ownership types. Multiple participants drew distinctions between experiences of the small private landowner versus experiences of large, industrial private lands within the policy system. Both owners are held to the same state standards; however, participants identified advantages that industrial entities often possess which help them meet those standards (e.g., more revenue, more representation in statewide policy discussions, access to large-scale agreements with agencies, etc.). Some participants found this unfair. Further inquiry into these perceptions could help better define family forest landowners' views and values of private property rights.

2) The Prevalence of the “Yes, But” Answer: Acceptance with Caveats

Participants demonstrated widespread acceptance of their highly regulatory forest policy environment as a whole but many emphasized the flaws in the policy system. I found that participants repeated one phrase in particular—"yes, but"—which demonstrated the conflicting nature of their narratives about policies. Though this phrase

first emerged in reply to the question regarding landowners' ability to achieve their forest management objectives, the “yes, but” pattern—an affirmation juxtaposed by a caveat, complaint, or justification—applies to and embodies participants’ multidimensional, and sometimes paradoxical, perceptions of their regulatory policy environment.

2.1) “Yes,” Landowners Accept Their Highly Regulatory Policy Environment

A majority (87%) of participants expressed some degree of support for the policies (from enthusiastic advocacy to tepid resignation. This high rate of acceptance was somewhat surprising based on previous research. Researchers studying landowners similar to these active family forest landowners (e.g., Boon et al.'s (2004) *classic forest owner* and Deuffic et al.'s (2018) *satisfiers* or *tradition-oriented forest owners*) reported their general aversions to existing, and especially to new, governmental intervention in private forests. Why would landowners who mostly claimed that policies did not respect their rights and who most commonly used the terms “frustrating” and “restrictive” to describe regulations show such widespread acceptance of their regulatory policy environment?

Though unexpected, participants’ support of regulations can be explained in two ways. First, landowners accepted their policy environment because they shared forest management objectives with state-level forestry policies. Both the participants and the state were working toward goals of sustainable timber production paired with maintenance and enhancement of ecosystem services. Studies showed that private forest landowners are more likely to accept policies when they possess an “overall sense of responsibility toward the goals that each regulation seeks to accomplish” (Quartuch &

Beckley, 2014, p. 213) and “agree with the reasons why...regulations were enacted” (p. 212). Likewise, landowners were more likely to accept policies when they required practices that landowners already supported, planned, or adopted (Deuffic et al., 2018; Serbruyns & Luyssaert, 2006). As stewards of the land, especially those who witnessed pre-FPA environmental conditions, many participants felt obligated to care for the forest resources that state policies aim to protect and voluntarily took action to maintain them. Though not all participants agreed that the policies did a good job of protecting these resources, nearly all understood and agreed with the *intent* of the policies, which might have made restrictive regulations easier to accept.

Second, when states and landowners shared objectives, state regulations theoretically “[did] not prevent [landowners] from doing things they would like to do” (Quartuch & Beckley, 2014, p. 213). This proved true for my participants; nearly all (94%) of them felt they were able to successfully achieve their forest management objectives within their regulatory environment. A high success rate was expected considering the participants’ identities as active landowners, some of whom have been navigating these policies since their inception; still, it was higher than anticipated. As they work toward similar goals, the state and its landowners may be working toward a mutually beneficial scenario, potentially generating stronger acceptance of regulations. In other words, they accepted the system because it worked.

2.2) “But,” Landowners Still Face Difficulties in the Policy System

Participants were generally supportive of their regulatory policy environment, yet they spent noticeably more time complaining about the policies than they did praising

them. They often expressed their acceptance with a caveat: the system worked, “but” it was not easy. Most interviewees generally supported the policies that guide their forest management choices, have successfully navigated their regulatory forest policy system to achieve their objectives, and did not personally experience repercussions from policy changes; so, why did these interviewees choose to spend so much time complaining about policies?

First, despite being active forest management practitioners, participants may have answered policy questions in the abstract versus in practice. For example, Olive & McCune (2017) and Ward et al. (2018) discovered similar contradictions among private forest landowners and their opinions on regulation. Both studies examined landowner attitudes regarding government intervention to conserve endangered species on private lands. Though their participants voiced willingness to conserve endangered species as a whole, they expressed resistance to or discomfort with the specific regulations (i.e., Endangered Species Acts) to protect such species. Walker et al. (2003) found the opposite to be true; they used questions about public versus private interests to explore private landowner attitudes about government-imposed zoning on private lands and found that, “many respondents who strongly supported property rights and rejected government controls in the abstract nevertheless acknowledged strong support for specific government interventions to protect the landscape” (p. 120). In other words, landowners felt differently about the concept of regulatory government oversight than they did about the actual regulations themselves. Thus, landowners may support the objectives or the

general approach of governmental regulations while still bristling at the requirements imposed by those regulations.

Another explanation may be that ownership impacted perspectives on policy; perhaps participants expressed different opinions about regulations applied to their own lands versus regulations applied to others' lands. Landowners who viewed themselves as passionate stewards, some claiming to care for their land above and beyond policy requirements, may not feel that additional regulations were necessary on their lands. Yet, they may have felt differently about their neighbors or other landowners, who may benefit more from state intervention.

2.3) “The Unknown Factor” is the Biggest “But:” Consequences of Uncertainty in the Policy System

Researchers suggest that landowners are generally averse to regulatory changes, especially if they require landowners to change their forest management practices (Serbruyns & Luyssaert, 2006), and that family forest landowners benefit from predictability in their policy environment (Johnson & Sniekus, 2019). Both findings proved true among my participants. Though interviewees described several challenges they have faced in their policy environment, most of their concerns (including concerns for the future) were associated in some way with uncertainty. One landowner described this as “the unknown factor” (#29). Most participants associated policy changes with negative consequences for landowners (e.g., loss of private property rights, delayed operations, added and unforeseen costs, etc.). This fear and negativity generally did not

stem as much from *actual* negative consequences, but mostly from *potential* or *risk* of negative consequences.

Uncertainty is a common issue for private forest landowners (Johnson et al., 1997), a finding confirmed among participating California's family forest landowners. It seemed that in their highly regulatory environment, uncertainty was derived from two different sources. First, family forest landowners faced *regulatory uncertainty*, directly associated with changes to state-level forest policy structure or language. Second, they faced *enforcement uncertainty*, resulting from implementation of new, or even current, rules by state agencies.

Regulatory uncertainty among family forest landowners stemmed from temporal changes rather than personal interpretation. Interviewees were generally able to comprehend and implement introduced regulations, but it's the introduction of the regulations that caused them concern. In California, the Board of Forestry amends the language of the FPRs annually and periodically introduces new rule packages (Thompson & Dicus, 2005). Some of these changes are trivial but others are substantial. From a participant perspective, the state did not regularly notify landowners of these changes. Several interviewees cited these frequent and often uncommunicated revisions as major concerns and expressed more worry for future changes than they did about past changes. They had a fear of not knowing and stressed about the possibility of repercussions should they fail to keep up with regulatory changes. Participants noted that even though NTMPs provided perpetuity provisions for more consistent regulations, they were still held responsible for implementing certain changes.

Frequent regulatory change also heightened enforcement uncertainty. Changing FPRs and multi-agency involvement introduced opportunities for ambiguous or inconsistent rule enforcement not only among CAL FIRE, but also among the other review agencies. Several participants, including those with current and former state agency backgrounds, identified variable rule interpretation among agency reviewers and inspectors as a concern. There were strong themes of mistrust between participants and regulatory agencies. Family forest landowners in other states with regulatory forest policy frameworks perceived unfair or uneven regulation enforcement, though complaints tended to highlight the underperformance of enforcement rather than overperformance (Bouriaud et al., 2013; Quartuch & Beckley, 2014). That said, researchers reported themes of mistrust in the government and resistance to allow agency inspections for fear of inconsistent policy enforcement (Olive & McCune, 2017).

Private forest landowners in Maine, as described by Quartuch and Beckley (2014), faced similar uncertainty. Like this study, participants felt “ok” with the regulations, and most were “ok” with enforcement. However, only two interviewees in their study discussed potential for future regulations that infringe on their rights. In my interviews, most participants discussed future regulations to some extent and voiced concern for the unpredictable consequences such changes may bring.

CONCLUSION

This extreme case study highlights a small sample of California's active family forest landowners but draws attention to their importance as stakeholders in the larger landscape of California's forests. Participants showed strong connections to their forests and genuine concern for the protection of their public trust resources. These self-identifying good stewards generally supported the policies of their regulatory policy environment because: 1) they already implemented aspects of these policies on their lands, and 2) their land management objectives—which prioritized timber growth and production—aligned with the intentions of state policies. However, California's regulatory environment seemed to do little to acknowledge the value of their stewardship and these shared objectives, which was frustrating.

With 20% of California's forests under ownership of these families, the state has a vested interest in family forest landowners playing their roles as good land stewards and active forest managers to achieve shared objectives of forest resilience and sustainability in the future. Thus, as forestry policies change, it will also be important to assess how family forest landowners change as a group. Further research may explore policy impacts on industrial landowners as compared to non-industrial landowners, including families. Often with larger resources and political influence, these industrial owners can better adapt to regulatory changes than other landowners. If policies are formed with industrial landowners in mind, how might that impact families? Additional research might also examine the potential for regulatory fatigue among participants. Do landowner policy

perspectives depend on their length of ownership? How might perspectives of newer forest landowners differ from those of more experienced landowners? Though participants' length of ownership was recorded, it was not explored in this study.

Additionally, the results of this study may suggest that there is a disconnect between the forest policy experts and enforcers and the policy followers in California. In Chapter 1, California's forest policy expert explained that “[the state's] highly regulatory process provides certainty to landowners, about what they need to do to be able to manage their land through the various suites of tools.” Yet, some family forest landowners' still view their regulatory policy environment as uncertain. This disconnect may be reflected in the outcomes of AB 1492, legislation intended to increase certainty for private landowners but may actually be hindering it.

If indeed regulatory and enforcement uncertainty are the common roots of family forest landowner's forest management frustration, then the state should consider incorporating mechanisms for stability into the regulatory environment, whether it is adding non-industrial private landowner representation to the Board of Forestry, bolstering new rule notification to private landowners, or promoting clearer inter-agency and intra-agency communication. Such solutions should also mirror the proven strategies for success that participants outlined, including planning for the long-term and increasing stakeholder collaboration. Some of these solutions may already exist; for example, perhaps funding from AB 1492 could be shifted to incorporate family forest landowner perspectives in the timber harvest plan review process to hone effective streamlining efforts. Finally, adding family forest landowner voices to policy discussions and literature

brings attention to their roles as key forest stakeholders in the provision of public trust resources on private lands in California

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APPENDICES

Appendix A: State Forest Policy Expert Interview Guide

State Forest Policy Expert Interview Guide

Research Project Description: In the US, each state has the power to implement forest management policies on private lands, which mainly focus on timber harvesting practices. As a result, the US is a mosaic of 50 different approaches to forestry policy, ranging from *regulatory* to *non-regulatory/voluntary*, with many states somewhere in between. My project aims to characterize and further define the diversity of forestry policy approaches present across the US. I've chosen to take a closer look at a subset of states that have interesting or distinct forestry policy approaches to understand: 1) how the state creates forest management policies on private lands, and 2) what triggers or drives policy changes.

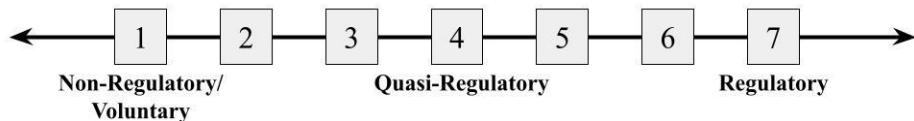
Background:

1. Please describe your current position/affiliation and how you came to be where you are today.

Characterizing Your State's Forestry Policies:

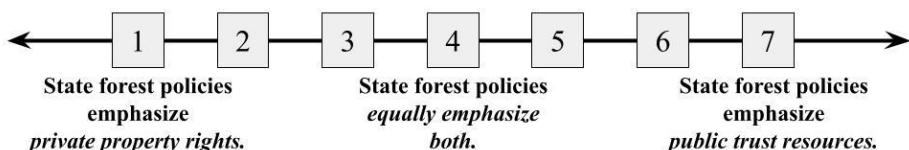
2. How would you describe your state's state-level forestry policies to someone who knows little to nothing about them?
3. Let's say that a family forest landowner in your state wants to sell their timber. Can you take me through the steps they might take to make this happen?
4. Which agency is in charge of creating state-level forestry policies that manage private forest lands? What role(s) does this agency play in your state?
5. Who else is involved in creating these policies (e.g., other agencies, organizations, people)? Who else informs the policy decision-making process?
6. In your experience, who is *really* driving policy decisions?
7. As I mentioned, researchers have described the states' different approaches to forestry policy as ranging from *regulatory* (i.e., usually include state laws and administrative

rules) to *non-regulatory/voluntary* (i.e., usually include less extensive state authority over private lands and depend on voluntary policy instruments) with several states somewhere in the middle, or *quasi-regulatory*. With this in mind, how would you describe your state's policy approach using the 1-7 scale below? Why have you chosen this number?



Balancing the Public Trust Doctrine and Private Property Rights:

8. What forestry policies or programs in your state help to protect public trust resources?
 9. Do you think these policies or programs do a good job of protecting these resources?
 10. Do you think forestry policies or programs in your state do a good job of respecting private property rights? Why or why not?
 11. Now that we've explored this topic a bit, how would you describe your state's balance between protecting public trust resources and respecting private property rights using the 1-7 scale below? Why have you chosen this number?



Policy Changes Over Time:

12. How have state-level forestry policies changed in the last 20 years or so?
 13. In your opinion, what do you think is the #1 factor that has driven these changes?
What other factors have driven these changes?
 14. What kinds of policy changes (if any) might you foresee in the future?
 15. As a forestry policy expert, what kinds of changes would you like to see?

Appendix B: State Timber Product Information References

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Appendix C: Family Forest Landowner Interview Guide

Family Forest Landowner Interview Guide

Research Project Description: As you may know, each state in the US has the power to create and enforce forestry policies that guide forest management (i.e. timber harvesting practices) on private lands. States can range from *regulatory* to *non-regulatory/voluntary* and anywhere in between. Part of my thesis focuses on California as a case study state with a regulatory forestry policy approach. Family forest landowners like you must navigate this regulatory policy environment in order to actively manage your forests. I am interested to hear about your experiences managing your forests within this regulatory framework.

Managing Your Land:

1. Tell me about your forested property (or properties) and your role(s) there.
2. As a private landowner, what do you value about your land?
3. What are your objectives or goals for your land? What kinds of things do you manage for?
4. What kinds of forest management activities have you implemented in the past, especially within the last 10 to 20 years? Which activities worked well for you? Which activities did not work well for you?
5. Who do you typically work with or rely on to make forest management decisions?

California's State-Level Forestry Policies:

6. As a California forest landowner, how might you describe California's state-level forestry policies to someone who knows little to nothing about it?
7. California has several specific policies that govern how timber harvesting may occur on private lands. I'd like to learn more about your experiences navigating these specific policies that define California's forestry policy environment. Can you tell me about your experience with the following policies?
 - a. CA Forest Practice Rules (e.g., timber harvesting permitting process, watercourse regulations, wildlife regulations, winter period ops, archaeological sites, etc.)

- b. Registered Professional Foresters (RPFs)
 - c. Licensed Timber Operators (LTOs)
 - d. Multi-agency review of timber harvest permits (i.e., working with CAL FIRE, CDFW, CGS, Coastal Commission, etc.)
 - e. Public comment and access to information (i.e., involving the public in the harvesting process)
 - f. Are there any other specific policies that have impacted your experience managing your forest?
8. In your experience, do you think California's forestry policies do a good job of protecting public trust resources (i.e., resources that benefit society as a whole, like clean water, clean air, healthy forests, biodiversity, etc.)?
 9. In your experience, do you think California's forestry policies respect private property rights (i.e., inherent rights of a landowner)?

Policy Changes, Past and Future:

10. Have California's forestry policies changed over the course of your property ownership (especially since 2000)? What kinds of changes have you noticed, and how have these changes impacted your forest management experiences?
11. Thinking back to the question about your objectives and goals—are you generally able to accomplish your objectives within California's current policy system? If not, what kinds of changes would help you better achieve your objectives?
12. Reflecting on our conversation so far, what are some of your concerns for the future of California's forestry policies? What are your hopes for the future?
13. What else do you want people to know about your experience as an active family forestland owner in California? Are there any questions you think I should have asked during this interview?

Appendix D: Family Forest Landowner Photo Gallery

The following images show examples of actual forested properties belonging to interview participants (n=12). Interviewees were asked to share their favorite photo of their land or a photo that captures why they are family forest landowners because interviews were conducted remotely because of COVID restrictions. This gallery provides an opportunity for readers to see some of the landscapes that inspire participants to manage their forests. Photos are not labeled to maintain participant and property anonymity.

