NARRATING DISTURBANCE:
RISK, POWER, AND MOUNTAIN PINE BEETLES

A Dissertation
presented to
the Faculty of the Graduate School
at the University of Missouri-Columbia

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
ELIZABETH WATERBURY PRENTICE

Dr. Hua Qin, Dissertation Supervisor
Dr. Jere Gilles
Dr. Soren Larsen
Dr. James "Sandy" Rikoon
Dr. Rebecca Scott

July 2020

© Copyright by Elizabeth Waterbury Prentice 2020

All Rights Reserved

The undersigned, appointed by the dean of the Graduate School, have examined
the doctoral dissertation entitled

Narrating Disturbance: Risk, Power, and Mountain Pine Beetles

presented by Elizabeth W. Prentice

a candidate for the degree of Ph.D. in Rural Sociology

and hereby certify that, in their opinion, it is worthy of acceptance

Professor Hua Qin

Professor Jere Gilles

Professor Soren Larsen

Professor James "Sandy" Rikoon

Professor Rebecca Scott

DEDICATION

To Alex, and to Aldo and Norah
Thank you.

ACKNOWLEDGEMENTS

I am profoundly humbled by the support I have received over these past years, and particularly in these last months which presented so many unprecedented challenges. Firstly I am grateful to Hua Qin, who was a thoughtful mentor and advocate for my success throughout this process. Particularly, I am grateful for the funding Dr. Qin provided via the Decision, Risk and Management Sciences Program of the National Science Foundation (Award #1733990 Dynamic Risk Perception and Action in Response to Forest Insect Disturbance in North-Central Colorado). I am also grateful to the rest of my committee: Jere Gilles, Sandy Rikoon, Soren Larsen and Becky Scott. Your classes and our conversations gave me the space and the tools to grapple with ideas that have needed me since I can remember – what a privilege! Thank you for your work.

I'm grateful to my parents, Susan and Chris Waterbury for raising your kids to strive and seek out wonder. I'm grateful to my siblings – Chris Waterbury for reading and editing drafts, and for the many conversations that helped to illuminate and untangle along the way, Evie Waterbury for your unflinching support throughout, and your ability to always put challenges in perspective, Isabel Waterbury for the inspiration you provide through your dedication to your work and for hanging out with the babies. And Susan Prentice, for your support and for always celebrating my accomplishments.

I'm grateful for all of the wonderful babysitters and care providers who have afforded me the time to do fulfilling work and return home to happy children. I'm grateful for the friends who have supported me along the way, from little

messages of confidence to celebrations of milestones, to helping provide me with space to work in these final months during the pandemic.

Finally, thank you to Alex. I started this journey seven weeks after we started our journey of parenthood and so it has required so much of both of us, but especially of you. Your faith in me and your ability to make our life so beautiful even as we've worked so hard has meant everything. I love you.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES	vi
LIST OF FIGURES.....	vii
ABSTRACT.....	viii
FOREWORD.....	1
INTRODUCTION.....	6
BACKGROUND.....	12
More-than-Human Political Entanglements: Mountain Pine Beetles and Forest Policy in Colorado	
LITERATURE REVIEW.....	21
Amenity Migration, Rural Gentrification and Community in the American West	
The Human Dimensions of Forest Insect Disturbance	
Political Ecology, Landscapes, and Insect Disturbance	
CONCEPTUAL APPROACH.....	35
The Social Construction of Environmental Change	
Green Governmentality	
METHODS.....	40
Study Region and Communities	
Research Design	
CHAPTER 1: CULTURE CLASH AND NARRATED IMAGES.....	51

Official Narratives	
Local Narratives	
<i>Shifting Political Ecological Imaginaries</i>	
<i>Embodied Encounters and Institutional Constraints</i>	
CHAPTER 2: TIMBER, ECOSYSTEMS AND NARRATIVES OF INDUSTRY DECLINE.....	85
<i>Industry and Timber-Dependent Community Narratives</i>	
<i>Amenity Based Narratives of Industry Decline</i>	
<i>Economic Change and Governing Discourses of the Environment</i>	
CHAPTER 3: BEETLES, FIRE, AND PROPERTY.....	109
<i>Disturbance and Landscape</i>	
<i>Forests Versus Stems</i>	
<i>Collaboration as Performance</i>	
<i>Wilderness and Wildernest</i>	
<i>Local Knowledge and Resistance in North Park</i>	
CONCLUSION.....	140
The Land Changes	
REFERENCES.....	144
VITA.....	159

LIST OF TABLES

Table

1. Socio-demographic Differences Between Study Sites.....	45
---	----

LIST OF FIGURES

Figure

1. Mountain Pine Beetle.....	15
1. and 3. Pitch Tubes Produced by Lodgepole Pine trees.....	16
4. Galleries Produced by Mountain Pine Beetle.....	17
5. Characteristic Blue Fungus Staining.....	17
6. Dead Lodgepole Forest Near Granby	18
7. Breckenridge Resort in Summit County.	44
8. Downtown Granby	44
9. Downtown Walden.....	44
10. Aerial Image from 2010 CSFS Forest Health Report	62
11. Residence on National Forest Land in Summit County.....	125

ABSTRACT

Beginning in the mid 1990's, an outbreak of Mountain Pine Beetle (*Dendroctonus ponderosae*) in northern Colorado affected over 3.4 million acres of primarily lodgepole pine forest. Mountain Pine Beetle are native to these forests, but the outbreak occurred at an unprecedented scope and scale, reflecting the legacy of forest management policies since the early days of European settlement and evoking new experiences and understandings of landscape in the resource-dependent region. Like much of the American West, this region is in the midst of a transition away from traditional extractive economies towards economies rooted in natural amenities and aesthetic landscape consumption. This transition is accompanied by demographic and cultural shifts, and has implications for the way that natural spaces are understood and ideas about what activities should orient people's relationships to the natural world. Across the disturbance affected area, three sites were selected to represent economic ideal types, ranging from high amenity resort destinations to small rural communities with strong roots in extraction. With data drawn from local newspapers, local and regional organizational publications, state and federal forest service documents and 26 interviews with subjects representing actor groups across the region, local narratives of environmental change were explored through the lens of green governmentality to understand how experiences of environmental change were contextualized by ongoing economic restructuring and cultural shifts. The meaning of the changing image of the landscape, the history of the timber industry in the state and competing narratives of industry decline, and the historic

implications of forest management policies in disturbance-dependent forests are explored to shed light on the way that perceptions of landscape are anchored in complex social terrain and how nature can evoke new understandings of nature.

Foreword

In this work, I explore an economic transformation and an ecological event that is vivid in my memory of growing up on the Front Range in northern Colorado. As a kid and throughout high school, my family spent every summer and most holidays at my grandparents' cabin about four miles from the entrance to Rocky Mountain National Park. Their cabin was only an hour from our home and so offered an easy and accessible vacation for my parents who were raising four kids on a teacher's salary in Boulder County. We spent our days hiking in the park, playing pinball and pool at the Estes Park brewery (long before breweries were "micro" or "craft"), collecting wildflowers, shooting arrows and BB-guns, and spending hours in the treehouse my grandfather made, nimbly bending pine needles into loops to build long, delicate chains.

Occasionally we'd go into town to "play turkey," popping in and out of the old-fashioned candy and souvenir shops alongside the throngs of tourists who'd descend on Estes Park during the summer months. We weren't officially "local" since at the end of a visit we'd return to what the actual locals called "the valley." But we were local enough to be afforded a vantage that let us know the community and landscape outside of those bustling summer months, when most of the shops downtown closed except for the local bars, and the park emptied.

Usually encircled by a procession of tourists, in the winter we'd hike to Bear Lake in the shadow of Hallett Peak and the Continental Divide and have it completely to ourselves, the vastness swallowing up our screams as we'd sled down the steep drops and out across the ice. We were local enough to watch

year after year the way that family owned restaurants and hotels struggled: inevitably closing, opening again under new ownership, closing again, and so on, eventually in an increasing number of cases to be bought out by resort corporations. Local enough to feel the pinch year after year of climbing entrance fees to Rocky Mountain National Park. Estes Park doesn't have the same draw that other luxury mountain communities do, probably because there is no ski area. And though it is gentrifying it still retains a kitschy family vacation quality, perhaps suited more for the day hiker or bumper car enthusiast than the globe-trotting elite. It is changing though. On my last trip back to Estes we had dinner at a restaurant that my grandparents frequented while my dad and then later I was growing up. Back then the specialty was pan fried rainbow trout, the prized catch in streams across the park. Now under new ownership, on this recent trip we had duck wings in a hibiscus-bourbon glaze and 25-dollar elk sloppy joes.

Around the time I graduated high school and left Colorado, not only were these economic and demographic changes underway but the landscape was being transformed as well. Around 2006 the Mountain Pine Beetle outbreak was expanding at its fastest rate, turning millions upon millions of acres of evergreen forest red with dead and dying trees. I remember how confusing it was to see the forests so wholly transformed and the unease with which I struggled to reconcile the normative violation I was witnessing with the knowledge that it was a natural event. Similarly, around this time the rate at which algal blooms began to appear in lakes in Rocky Mountain National Park increased, triggered by warming temperatures and excess nitrogen making its way through the atmosphere from

industrial farms and power plants many miles away. I remember looking out at the Never Summer range, and at Meeker and Longs Peak and seeing how the patches of glacier that were there throughout my childhood, and present in the many family photos that were all arranged before the same backdrop dating back to when my grandmother was a girl were suddenly, silently, gone.

As I've traveled back to Colorado in the years since I graduated high school every visit has seen a new stretch of land along the Front Range developed. On a recent trip back, I drove with my husband up Flagstaff Mountain right outside of Boulder. It's a steep, quick climb that in a matter of minutes puts you high above the city. Growing up we'd drive up Flagstaff at night and be able to see the vivid lights of Denver to the south and east, Boulder immediately below, and to the north the lights of Longmont and Loveland and eventually Ft. Collins. These islands were connected by thin streams of light on highways, which were themselves surrounded by expansive swaths of darkness. Today, the highways have been expanded and the light from one town to another across the Front Range is continuous, stitched together by the sprawl of subdivision after subdivision after subdivision.

In 2015, my research work at the University of Missouri gave me access to data from a 2007 study of experiences of the Mountain Pine Beetle outbreak in nine communities in northern Colorado. I was particularly drawn to the survey comments and interview data coming out of a community called Walden. The back page of the paper survey was left open for written comments and after completing 10 pages of questions, respondents from Walden would fill it up,

occasionally attaching additional pages as they told a story of cultural change in the state and the systematic loss of identity and economic opportunity in their community that manifested in the death of the forest. I cannot claim to have a great deal in common with most folks from Walden. I am not a fourth-generation rancher and my politics are left of left, but the lived relationship to the forests and the sense of loss people in Walden articulated deeply resonated with me. Their stories spoke of a landscape and culture in transition and provoked a great deal of thinking about how relationships to places are patterned by power, and the implications of the ascendant amenity economy and normative environmental subjectivities produced by “green capitalism.” Their stories articulated a skepticism regarding an environmental knowledge that removed people from the forests for the sake of the forest, and vested authority over the land they lived in distant experts.

Narratives, we know, emerge relationally, through the embodied observer’s interaction with their material and institutional contexts. And so, these narratives of environmental disturbance can elucidate the character of socio-natural assemblages and the stakes of both economic and environmental change. This work endeavors to be an account of the local effects of a changing climate and the way that climate change exposes, and often re-entrenches existing economic inequalities. Similarly, this is an account of the effects of globalization and the way that global economic restructuring produces scarcities at multiple scales, orienting people’s understandings of and relationship to the natural world through those scarcities. Globalization has also produced amenity

destinations like Summit County as spaces of environmental privilege, where the landscape is preserved, the price of property is high, and the forests provide a space for recreation and refuge, rather than labor. Disturbance challenges the social construction of nature and foregrounds nature's agency. Through the lens of disturbance, this work seeks to explore the internal contradictions engendered by this externalized idea of nature and interrogate what exactly is being preserved, and for whom.

Introduction

Normative ideas about the environment and values regarding how natural spaces should look or the kinds of activities that should orient human encounters with the natural world are invariably political. In certain contexts, this governmentality, or “conduct of conduct,” emanates from the state, which produces embodied environmental subjectivities through the direct regulation of land use (Agrawal, 2005). In more neoliberal contexts, the governance of environmental subjectivities is diffuse and multi-focal, circulating through the social body as constructed truths about nature via normalizing and disciplining techniques (Foucault, 1990; Rutherford, 2007). In such contexts the politics of nature’s representation, articulation, and discursive construction come to the fore. Here, the work of “saving nature” has been cast as innocent, inherently good and never implicated in relations of power. As Rutherford (2007) writes, in these neoliberal contexts: corporations, all levels of government, scientists, non-governmental organizations, and think tanks, have all “inserted themselves into the game of speaking for nature” (p. 295). Yet power over subjectivities also resides in the more-than-human world, and particularly in the context of environmental change, nature can in fact “speak” through transformation that evokes new understandings and narrative explanations of natural change. This agency and ability to reorient socio-natural relationships is made particularly manifest in the context of natural disturbance. Disturbance provides an occasion for challenging socially constructed truths about nature and laying bare the various ways in which representations, articulations and discursive constructions

of nature are hardly disconnected from but often reify existing power relations. In the context of disturbance, it's possible to observe the way that power over subjectivities emanates from the non-human, contending with the narrative explanations presented by those myriad actors who seek to speak for nature. As it challenges the "truth about nature" as told by multiple human actors, disturbance exposes, challenges, and occasionally re-entrenches existing inequalities as the positionality of the subject informs the degree to which a disturbance is experienced as problematic or constituting a risk to livelihood. Disturbance, and the degree to which it constitutes a problem or risk depends wholly on point of view. As Anna Tsing writes in *The Mushroom at the End of the World*,

As an analytic tool, disturbance requires awareness of the observer's perspective – just as with the best tools in social theory. Deciding what counts as disturbance is always a matter of point of view. [...] No single standard for assessing disturbance is possible; disturbance matters in relation to how we live. This means we need to pay attention to the assessments through which we know disturbance. Disturbance is never a matter of "yes," or "no"; disturbance refers to an open-ended range of unsettling phenomena. Where is the line that marks off too much? With disturbance, this is always a problem of perspective, based, in turn, on ways of life. (2015, p. 161)

The narrative constructions of risk associated with forest change, forest health, and socio-natural relationships all depend on and vary according to perspective and positionality. Narratives integrate experiences, knowledges and vulnerabilities and articulate the stakes of disturbance, and the meaning of non-human agency, for different groups.

Experiences of vulnerability to environmental changes are often seen to intersect with social inequalities at local, regional and global levels (Collins, 2008). The experiences and outcomes of such changes and risks are informed by institutional factors and individuals' access to decision-making power. Functioning as a key linkage between broader society and the lived environment (Field and Burch, 1988), natural resource-dependent communities are affected by a range of environmental changes and risks. Many of such natural resource-based communities are located in forested areas and are vulnerable to ostensibly natural and anthropogenic risks such as wildfires, droughts, and insect outbreaks. In the western United States, the frequency, duration, and intensity of these forest disturbances are exacerbated by climate change and local environmental changes associated with the transition away from economies rooted in natural resource-based production towards new economies of amenity and aesthetic landscape consumption (Bentz et al., 2010; Dale et al., 2001; Walker and Fortmann, 2003). Forest insect disturbances bear attributions at multiple and competing scales, from the practices of local extractive industries to the politics of state and federal forest management to global climate change (Petersen and Stuart, 2014; Müller, 2011; Bentz et al., 2010; Dale et al., 2001; Dale et al., 2000). Moreover, there is a growing consensus among researchers and practitioners that forest insect disturbances cannot be understood simply as biophysical events, but as dynamic risk events that involve human and more specifically, sociopolitical dimensions and actors (Flint et al., 2009).

Existing literature in the human dimensions of forest insect disturbance has explored public attitudes, risk perceptions, community contexts, community actions, and regional variability among communities affected by forest insect disturbance. While such work makes an important contribution, the power dynamics inherent in management decisions surrounding forest insect disturbance, and how local and official narratives of disturbances correspond to broader environmental discourses remains relatively understudied. Similarly, the ways in which disturbance itself can reconfigure relationships and understandings has not been thoroughly explored. Disturbed ecosystems, like all ecosystems, are power laden systems that contend with local, regional, and global social institutions and power structures (Robbins, 2011). Engaging with the ways in which local ecological change interacts with broader social systems through lived experiences and narratives can expand understanding of how the local environment is socially constructed, how public policy may produce, privilege, and marginalize certain environmental subjectivities, and how nature can evoke new understandings of nature.

As a loosely defined “community of practice” (Robbins, 2011), political ecology offers a salient, though underutilized perspective in developed countries for understanding the social and political construction of environmental risk (Collins, 2008). As local social groups and ecological communities have articulated in the context of regional social change, attention must be paid to the implications this has for the creation of differential vulnerability to and perceptions of environmental risk. When an economically heterogeneous group of

communities experiences a regional ecological disturbance, the variations in narratives of causality and discourses surrounding corrective or mitigating policy action reflect this differential, socially embedded risk experience. Whether, and the extent to which environmental change is framed as hazardous reveals something about the bases upon which different groups construct the local environment (Prentice et al., 2018). Moreover, examining how the discourses that undergird official natural resource management policy intersect with local narratives can help illuminate the way that different groups enjoy different levels of power with regard to policy creation and its material consequences.

Since 1996, an extensive mountain pine beetle (MPB) (*Dendroctonus ponderosae*) outbreak in north-central Colorado has affected more than 3.4 million acres of primarily lodgepole pine forests (Colorado State Forest Service (CSFS), 2016). Although MPB is endemic to Colorado forests, this outbreak was unprecedented in scope and intensity. The outbreak has constituted both a biophysical and social disturbance in the resource-dependent region and precipitated community responses reflective of their distinct economic bases, histories, and biophysical attributes (CSFS, 2016). Local experience with this sweeping forest disturbance provides an opportunity for the study of dynamic environmental risk perception with special attention to how narratives of risk are contextualized by local, regional and global political economic factors. This setting, which is characterized by its biophysical, economic and demographic heterogeneity (Flint et al., 2012) provides an opportunity to examine how institutional forces and normalized truths about nature pattern experiences of the

environmental change, perceptions of and vulnerabilities to risk, and responses to ecological disturbance.

Community responses to forest disturbances are known to be informed by the priorities of community members with access to local decision-making power, the policies of management officials and politicians, and the biophysical characteristics of the region itself (Flint et al., 2012). The discourses of environmental risk and different experiences of exposure to environmental hazard are further contextualized by the region's shifting economy, which parallels the economic transition underway throughout much of the American West away from the extractive economies typifying the "Old West" towards amenity-based economies rooted in aesthetic landscape consumption (Walker and Fortmann, 2003). This transition has implications for the way that socio-natural relationships are conceptualized, articulated, and how the priorities of historic and new constituencies are implemented in forest management policy.

This study builds upon previous work examining perceptions and actions in response to a forest disturbance by Mountain Pine Beetle in north-central Colorado. As existing work has indicated that communities experienced the outbreak and related forest changes differently on the basis of socio-economic history and amenity status, this study explores the narratives constructions of the Mountain Pine Beetle disturbance in north-central Colorado and seeks to understand how narratives emerged relationally to produce different embodied experiences of the event and subsequent forest regeneration. Special attention is paid to the narratives of the Colorado State and U.S. Forest Service as the

entities endowed with official power over forests in the region, and the material implications of these official narratives for other groups. Consistent with a political ecology approach, attention is paid to the way that local, regional and global patterns and processes are implicit in individual experiences of environmental change, and how in the present context these experiences are driven by competing forms of rural capitalism, and constructed truths regarding landscapes and socio-natural relationships. Environmental risks are situationally defined, meaning that it is not taken for granted in the course of this research that the MPB outbreak in disturbance-dependent Colorado forests constitutes an inherent risk. Rather, its discursive presence and the degree to which it is emphasized is understood as a critical facet of a particular discourse and the environmental subjectivity of a particular actor group.

Research questions. Ultimately, this work seeks to explore how various local narratives of attribution correspond to global discourses of the environment, how these narratives produce embodied experiences of environmental change, and how the “official narrative” affects experiences across groups.

Background

More-Than-Human Political Entanglements: Mountain Pine Beetles and Forest Policy in Colorado

As management actions and policies emerge as articulations of the power that has been invested in ecological science, it is necessary to explore the ecological narrative of MPB. Although MPB are endemic to Colorado forests, the

outbreak occurring at the turn of the 21st century was unprecedented in scope and intensity; its severity compounded by years of drought immediately prior to the outbreak, and nearly a century of management policies that excluded natural disturbance, in the form of fire, from the disturbance-dependent landscape (Donovan and Brown, 2007). This outbreak, and the meaning of related forest changes for local groups, represented a culmination of biophysical and social transformation occurring throughout the region over the past several decades.

Historically in North America, bark beetle populations are cyclical and only periodically erupt into outbreaks. Although outbreaks can result in mortality over large areas, they are understood as mechanisms of forest regeneration and succession that redistribute nutrients and growing space. As such, beetles generally attack larger trees, thus helping to renew the forest by killing older and declining trees while allowing younger and more productive trees to compete more successfully for sunlight and nutrients (USFS, 2011). However, this particular outbreak occurred in synchronicity with several other bark beetle outbreaks throughout North America and was unprecedented in the degree of mortality and spatial extent. According to a Forest Service Report commissioned by Congress in 2011, at the time bark beetles were killing trees in larger numbers, at a faster rate, over longer time periods and over larger areas compared to outbreaks recorded over the past century (USFS, 2011).

The connection between the outbreak and climate is quite evident. Like all insects, bark beetles are ectotherms, meaning that their body temperature varies

with the temperature of the environment. The number of eggs a beetle lays, a beetle's ability to disperse, the rate at which a beetle progresses from one life stage to another and the duration of the beetle's life are all affected by temperature. Most of the years in which the outbreak occurred were among the warmest in the region since record keeping began in the mid 1800's (USFS, 2011). Warmer winters encourage beetle survival from year to year, leading to larger populations. Such temperatures, particularly when accompanied by drier conditions can also create stress for trees, making them more susceptible to insect attack.

While MPB are known to attack multiple tree species and did so during this particular outbreak, adult beetles preferentially seek out mature lodgepole and ponderosa pine trees to bore into, mate and deposit eggs. Once in a tree, beetles emit aggregation pheromones that attract other beetles, and after many beetles have attacked the tree, they emit an anti-aggregation pheromone to ensure their eggs have sufficient resources (Raffa et al., 2008). Beetles themselves weaken trees, but trees are also weakened by a fungus that beetles carry with them that stains the wood of affected trees blue, lending "beetle-kill" pine its characteristic blue-grey streaks (DiGuistini et al., 2007). Beetles will attack trees of all ages, but forests with an abundance of mature trees provide an ideal opportunity for beetles to reproduce and reach epidemic levels. Younger, healthier trees are able to defend against invasion through exuding resin that pitches beetles out, producing bulbous, honey colored "pitch tubes" that are visible on the outside of trees and key signifiers of infestation. Stress due to

drought inhibits the pitch tube response and warming temperatures exacerbate epidemic level populations. Even with an abundance of prime host material (mature, even-aged forest stands), extended periods of cold temperatures historically served as an effective regulator of MPB populations (Carroll et al., 2003). Warming temperatures speed up the life cycles of beetles, leading to increased numbers of individuals in populations and reducing generation times. Ecologists argue that in the context of outbreak events of unprecedented scope and intensity, the resilience boundaries of the rest of the forest ecosystem are questioned (Bentz et al., 2010).

Figure 2. Mountain Pine Beetle (photo: National Park Service)

Figure 3 and 3. Pitch tubes produced by lodgepole pine trees (photos: National Park Service)

Figure 4. Galleries produced by Mountain Pine Beetle (photo: Livingston)

Figure 5. Characteristic blue fungus staining (photo U.S. Forest Service)

Figure 6. Dead lodgepole forest near Granby (photo: Pankratz, 2008)

Colorado is characterized by its extent of public lands. Sixty-eight percent of forest land in Colorado is federally owned, with the majority of that land under the purview of the U.S. Forest Service (CSFS, 2008). Human interaction with Colorado forests began long before European settlement, with early indigenous people altering forested landscapes with the periodic use of fire to drive game (Binkley and Duncan, 2009). However, settlement affected the landscape in dramatic ways. The grazing of high populations of livestock affected existing disturbance regimes by lessening the incidence of low-severity ground fires. Later in the mid-1800's, during the period of westward expansion, forests were transformed by widespread harvesting to supply mine timbers, railroad ties, and timber for the construction of homes and other structures (CSFS, 2009). The extent of this harvesting, carried out in a relatively short period of time, created the conditions for the even-aged forest seen in the state today.

Colorado forests first became the purview of federal forest management in 1893 when President Benjamin Harrison established five federal forest reserves in the state to be managed for long term timber production (CSFS, 2009). Unlike the national parks which were established later through the U.S. Department of the Interior for the express purpose of landscape preservation, Forest Service lands and the agency itself are bureaucratically housed within the U.S. Department of Agriculture. A pivotal moment in the management of these lands came in 1910 when a massive wildfire termed “the Big Burn” or “the Big Blowup” burned nearly three million acres of forest land in northwestern states. The extent of the fire and associated losses resulted in a foregrounding of aggressive fire suppression policies across federal forest lands that have dramatically impacted the current condition of forests (Diaz and Swetnam, 2013).

While the timber and wood products industries in Colorado were never as dominant as in other states due to slow-growing forests and steep topography, the economic growth and rapid housing development that marked the mid-20th century postwar years meant a drastic increase in the sale of timber from federal lands. Leading up to and during this time, management of federal lands was guided by the principle of sustained yield, or maintaining a relative balance between new growth and harvest (Luckert and Williamson, 2005). In 1960, the principle of multiple-use was added to sustained yield, shifting the focus of management beyond tradition timber production towards nonmarket amenity services such as recreation, water and wildlife in Colorado forests (Bowes and Krutilla, 1985; CSFS, 2009).

The following decades brought the passage of a variety of environmental laws reflecting this expanded understanding of forest value including the Wilderness Act, the Wild and Scenic Rivers Act, the Endangered Species Act, the National Environmental Policy Act and the National Forest Management Act. By the 1980's the concept of ecosystem management was widely adopted as the prevailing paradigm for forest management rather than the focus being solely on timber production as it was in preceding decades. Ecosystem management seeks a more holistic approach to management by emphasizing the co-constituting relationship between society and nature, the complex relationships that exist between species, and the importance of biological diversity (CSFS, 2009).

The turn of the 21st century saw a marked decline in timber sales from public and private lands, decreasing from 26,125 national forest acres in 1990 to 7,389 in 2008 (CSFS, 2009). Rates of forest logging declined by more than 90 percent since the 1980's as a result of lower supplies of timber being sold from national forests. Currently, most harvesting that does occur is focused around reducing hazards in the form of falling trees or creating "defensible space" around homes (Binkley and Duncan, 2009). The contraction of the timber industry in Colorado was compounded by the plummet of North American lumber markets beginning in the summer of 2006 (CTIA, 2006) and a corresponding decline in the wood products industry. A diminished industry presence in the state affected the management capacities of state and federal entities as well as management on private lands as wood processing facilities closed (CSFS, 2009).

In the context of these existing market constraints, a decrease in “social license” for harvesting on public lands, and the placement of the lynx on the endangered species list in the early 2000’s with requisite habitat protection in dense lodgepole pine forests, represented further constraints to the timber industry’s involvement in forest management in Colorado.

Today, management activities on public lands are largely oriented towards wildfire protection and mitigation as the Wildland-Urban Interface (WUI) has expanded with increasing population and development in forested areas driven by amenity migration. This growth in population has led to a rise in landscape sprawl as development in mountain amenity destinations has emphasized single family – and often vacation – homes on parcels of 10-100 acres (Binkley and Duncan, 2009). Such development has resulted in the fragmentation of formerly expansive contiguous swaths of forest into a mosaic of parcels with multiple owners and managers, and increased the social salience of fire management to protect people and property. Towards the end of the 20th and beginning of the 21st century Colorado began to see a resurgence of large fires related to drought but also to the ecological legacy of fire suppression policies and the changes in forest and fuel structures that accumulated during a century of infrequent fires (Binkley and Duncan, 2009).

Literature Review

Narratives of environmental change are created relationally and integrate social, political economic, and ecological phenomena and processes. Thus, this study is situated at the intersection of several bodies of literature: those that

explore demographic and economic changes similar to those underway in the study area and their relationship to social inequality and community resilience, work in natural resource sociology in the human dimensions of forest insect disturbances, and the political ecology of hazard vulnerability and the politics of landscape.

Amenity migration, rural gentrification and community in the American West. North-central Colorado is experiencing two ongoing and interrelated changes that reflect ongoing changes in rural areas of the western United States more generally. On one hand, there is the transition away from the extractive and agrarian economies typifying the “Old West,” of logging, ranching, mining and agriculture, towards postindustrial economies based on services, tourism, recreation, government, culture, education and information technology (Robbins et al., 2009; Winkler et al., 2007). On the other hand, deeply interconnected with and arguably precipitating the first process (Vias, 1999) are the sociodemographic shifts associated with amenity migration. These demographic changes mean that the residents of such rural and nonmetropolitan areas are increasingly younger, more highly educated, more politically liberal, receive more non-earnings income and reside in more valuable housing than long-time residents (Power and Barnett, 2001).

The ongoing changes throughout rural areas and particularly in areas that have become amenity destinations are inextricably linked to global economic change. The increasing “footlooseness” of capital in the era of globalization, and the way that globalization has largely transferred primary commodity production

out of the rural United States, means that more rural destinations have been constructed as landscapes characterized by lifestyle rather than livelihood (Collins, 2008). These changing economic conditions invest people with new cultural attitudes (Mitchell, 2000) that inform their engagement with the local environment. These cultural attitudes include an increasing preference for “quality of life” attributes (scenic views, recreation opportunities), associated with preservation and minimal active management of the public lands (Winkler et al., 2007).

In terms of the demographic and socioeconomic consequences of this migration, to date, the literature on amenity migration and inequality has three primary emphases: the commonalities or trends that are discernible across spatial and temporal contexts, the spatial heterogeneity and social, political, and cultural nestedness of amenity migration processes, and a critical perspective that links amenity migration to global processes of inequality— also called the “rural gentrification” thesis.

While case studies tend to dominate the literature overall, those studies that emphasize trends across various contexts rely on larger quantitative datasets and longitudinal analysis. Hunter et al. (2005) illustrate that long-term rural families residing in high-growth amenity and recreation areas tend to achieve higher annual incomes than do their counterparts in non-growth amenity/recreation areas, regardless of the sex, race, or age of the family head. However, any relative gains in income are supplanted by the migration-driven increase in cost of living. These findings are similar to those in Saint Onge et al.

(2007), where occupational prestige is used as an indicator for being relatively advantaged or disadvantaged by amenity migration. Saint Onge et al. (2007) show that on average, residents in high-growth, amenity-rich rural areas have higher income growth over time and higher levels of initial occupational prestige compared to those from other rural areas, but that socioeconomic gains are primarily for individuals with low baseline prestige. This supports the hypothesis that amenity migration contributes to overall inequality in destination counties as migrants are often high skilled, high earners whose relocation creates an expansion of the low wage service sector.

Nelson and Nelson (2014) articulate similar findings, using cluster analysis to illustrate how non-metropolitan counties can be grouped according to characteristics of housing markets, demographic changes and socioeconomic shifts. Their analysis shows that as baby boomers are resettling in amenity destinations, they bring the demand for low wage service jobs that tend to be filled by Latinx people, revealing a racial and ethnic component to amenity migration in addition to the class one. This is evident in the high amenity communities of the northern Rocky Mountains in Colorado, such as those of Summit County, where the Latinx population increased 54 percent between 2000 and 2010 (Summit County, 2016). The classed and racialized relationships that emerge in this context are explored critically by Park and Pellow (2013) in their ethnography of Latinx and migrant workers living precariously and fulfilling low wage service work for the global elite in Aspen, Colorado. Park and Pellow connect the racialized labor effects of amenity migration to exclusionary cultural

constructions of the environment as well, describing how in 1999 the Aspen City Council unanimously passed an anti-immigration resolution, asserting a belief in the deleterious effects of immigration to the nation's ecosystems.

While these broader trends are illuminating and important to identify, the effects of amenity migration remain diverse, context specific and historically and politically embedded (Sayre, 2011). The factors that inform amenity migration processes in particular contexts are important to elucidate as diverse rural social and environmental settings are often obscured as a single "rural" destination (Gosnell and Abrams, 2011). The challenges that emerge in destination areas and communities are informed by these contextual factors. In the global North amenity destinations are often sites of cultural clash between old-timers and newcomers, environmentalists or "preservationists" and those prioritizing natural resource extraction for economic development, whereas in the global South, conflicts are often centered around access to resources, affordable living and livelihood improvement (Ranier, 2016).

Socio-environmental interactions are also affected by amenity migration, as amenity migrants are shown to have different cultural values than many long-time residents, particularly with regard to resource use. These cultural differences are reflective of class differences, and economic priorities can subvert or at least complicate consensus about the local environment (Robbins et al., 2009). An emblematic site of this disjunction between environmental imaginaries is the American West, where the majority of literature devoted to amenity migration is focused. This region is often conceptualized as a storied

frontier land traditionally anchored in extractive and manufacturing economies – the Old West – that is in the process of being replaced by service sector and high-tech industries – the New West. Global market forces and the global regulatory context that facilitates them are implicated in these localized economic, social and cultural changes (Gosnell and Abrams, 2011).

The final perspective explored in amenity migration literature is a critical one which emphasizes the commodification of landscapes and links amenity migration to broader global processes of inequality. Through a critical lens, amenity migration is viewed as a race and class specific phenomenon inspired by consumption. The uneven circulation of capital and changes in the spatial division of labor have contributed to this, and the roles of production and consumption are critical in rural gentrification, as in urban gentrification (Ghose, 2004). The “community economic development” framing of amenity migration is of particular critique in this body of literature, as it is shown to be misleading and often deployed at the expense of attention to the way that destination areas are composed of race, class and age segregated places, and how economic growth due to an influx in wealthy residents can hide high unemployment (Winkler, 2013). Within the rural gentrification thesis, amenity destinations are understood as commodified transnational spaces that have emerged as such from the elite’s desire to insulate themselves from the conflicts of urban life (McCarthy, 2008; Ranier, 2016). Migration to these “consumptive landscapes” has the effect of re-entrenching and legitimizing existing inequalities while generating new ones (Finewood, 2012). Moreover, from a natural resource management perspective,

the higher value placed on landscape aesthetics or maintaining the desired aesthetic value of natural amenities and resources at the landscape level brings up issues of social control, which produces conflicts among old and new residents as old residents are pressured to conform to new standards of the commodified landscape (Walker and Fortmann 2003). Cultural values about the desirable image of the landscape transmute individual land ownership claims as landscapes themselves become the “possessions of those with the wealth and power to control them” (Duncan and Duncan, 2001). Amenity migrants seek out such destinations in order to consume an imagined idyllic landscape with the expectation that such landscapes exist in relative equilibrium and that public policies will protect them from human alteration (Walker and Fortmann, 2003). On the other hand, historic or more extraction-based communities expect that such landscapes are inherently dynamic and characterized by ongoing transformation that includes human activity (Robbins, 2011).

Many of the patterns of inequality that are visible globally become visible at a local level in amenity destination areas, as the global market precipitates connections between the urban and the rural and the local and the global (Golding, 2014). This is particularly apparent in housing, as gentrified rural counties are more susceptible to greater home value segregation, and over time a greater homogeneity of home values, highlighting the spatial and temporal pattern of widening wealth inequality in gentrifying rural counties (Golding, 2016).

There are discernible effects to labor in destination areas too, as migrant populations tend to be bifurcated, with a cluster possessing high-value skills and

the other very low-value skills. This contributes to inequality by weakening the position of labor in the context of globalization's characteristically hyper-mobile capital, and affects the distribution of income between the skilled and unskilled (Abrahamson, 2004). The increasingly bifurcated class structure and glut of second homeowners who are often only in destination communities a few weeks of the year undermines community resilience as it makes it more challenging to issue collective responses to stress and change, such as in the event of ecological disturbance.

Community interactionism. Community interactionism presents a concept of community that relies on the importance of a shared locality and sense of mutual vulnerability for collective action (Wilkinson, 1991). In the literature on sustainable community development, much hinges on the role of the community in fettering both individualistic impulses and global economic pressures (McCay and Jentoft, 1998; Bridger and Luloff, 1999). The potential for sustainable development in communities is informed by the presence or lack of this common investment in territorialized, local life in an age where social interaction is less and less constrained by space. To that end, an abundance of influence and decision-making power by extra-local forces has the potential to be antithetical to local community development or improvement insofar as it constrains local community interaction (Wilkinson, 1991). Individuals' interaction with both intimate and loose ties in the community is an expression of an "elemental bond" of vested interest in the local (Wilkinson, 1991, p. 35). Vested interest and mutual vulnerability provide a foundation for decision making related

to the management of shared space, and a basis for organizing community action.

It's important to note that shared vulnerability does not mean that vulnerability is equally distributed across the community or that inequality and power relations do not exist at the community level. Yet when community is considered interactionally, one can identify how increasing numbers of absentee landowners and the replacement of livelihood landscapes with seasonal lifestyle ones might undermine cohesion and collective action. The geographic separation between decision makers/influencers in land management and the land itself is far from insignificant in that the territoriality of a community is the "spatial manifestation of a fundamental organization of interdependencies among people" (Wilkinson, 1991, p. 53). A rupture in this interdependency has implications for the community as it pulls power away from local residents and institutions. Shared stakes in the outcome of decision making related to their common locality is usurped by the instrumentality of a community being offered up as a commodity, as is the case with resort towns/amenity-based communities. This ongoing transfer of power and resources away from local community members can prove an obstacle to collective action as community members suffer a kind of vacuum of power that Carl Kraenzel (1955, 1980) refers to as the "social cost of space." The sociodemographic changes associated with amenity migration reflect global changes associated with economic globalization. The footlooseness of capital, transnational consumptive lifestyles of the elite and the transfer of primary commodity production out of the United States create unique dilemmas

for extractive and amenity destination communities alike, particularly with regard to local environmental change.

The human dimensions of forest insect disturbance. Exploration of the human dimensions of forest insect disturbance represents a burgeoning area in the study of human environmental interactions. Existing work examines the linkages between disturbances and broader socioecological systems at multiple scales, considering how local disturbances are informed by global forces including the market and changing climate (Petersen and Stuart, 2014; Bentz et al., 2010; Dale et al., 2000, Dale et al., 2001), and how disturbances affect the attitudes and risk perceptions of local communities (Qin et al., 2015; Chang et al., 2009; Flint and Luloff, 2007; McFarlane et al., 2008; Müller and Job, 2009; Parkins and MacKendrick, 2007; Qin and Flint, 2012).

As discussed, there is a discernable link between global climate change and forest disturbances including insect outbreaks (Bentz et al., 2010; Dale et al., 2000; Dale et al., 2001). While disturbances have always served an important role in shaping the composition and functional processes of forests, the frequency, intensity, magnitude, and consequences of recent disturbances, including the MPB disturbance in Colorado, are traced to changes in climate and forest management practices. Given the tendency of disturbances to interact and cascade within ecosystems, their increased prevalence represents a challenge for forest dependent communities (Dale et al., 2001).

Much of the existing work in the human dimensions of forest insect disturbances is focused on community perspectives and responses (Chang et al.,

2009; Flint and Luloff, 2007; Kooistra and Hall 2014; McFarlane et al., 2012; Molnar et al., 2007; Müller and Job, 2009; Parkins and MacKendrick, 2007; Porth et al., 2015; Qin and Flint, 2012). Community contexts illustrate the collective and variable responses to natural events and the specific effects of forest management on a local level. Disturbance-affected communities offer sites at which it is possible to see the interaction between local residents and management entities and the relations of trust and power implicit in these interactions (Porth et al., 2015). The community interactional perspective is engaged to explore the spruce bark beetle (*Dendroctonus rufipennis*) outbreak on the Kenai Peninsula in Alaska and the MPB outbreak in Northern Colorado (Qin et al., 2015; Flint et al., 2012; Qin and Flint, 2010; Flint, 2006; Flint, 2007). In these cases, among other variables, risk perceptions and attributions vary by affected community, illustrating each community's unique and collective experience of the disturbance. As insect disturbances usher in further disturbance regimes, the shifting priorities of community members indicate the extent to which environmental problems and vulnerabilities are socially constructed as dynamic social, institutional, environmental, and cultural processes inform the way individuals experience risk, with these forces and processes coming to coalesce at the community level (Flint, 2006).

The fluidity in value-laden community experiences of and responses to insect disturbances is globally visible in a synthesis of forest insect disturbances in Canada, the United States, and the Bavarian forests in Germany (Flint et al., 2009). The synthesis notes the extent to which forest disturbances, as all

ecological events, are viewed through complex cultural and economic lenses. Combined with local political and legal frameworks that work to create and constrain management opportunities, these broader forces ultimately determine how communities are moved to respond in the face of perceived ecological threats (Flint and Luloff, 2007; Tomlinson et al., 2015). This process is inherently dynamic and shown to change over time as a community's economic history, amenity status, and biophysical features inform perceptions of risk, responses to disturbances, and ultimately a specific ecological imaginary, or idea of what the landscape should look like (Flint et al., 2012; Qin et al., 2015).

Political ecology, landscapes, and insect disturbance. Political ecology offers an important lens through which to conceptualize the co-constitutive and inherently political relationship between society and the lived environment, particularly in the context of both economic change and ecological disturbance. Earlier political ecology perspectives on risk explored trends in which the least powerful groups in society systematically inhabited the most hazardous environments and the way in which this arrangement was mediated and perpetuated by state and market forces (O'Keefe et al., 1976; Robbins, 2002). Currently, studies of the political ecology of risk and hazard vulnerability are focused primarily in settings other than the United States, where they critically examine "capital-driven" environmental disasters and discourses of risk (Huber et al., 2017), the implications of the neoliberal valuation of the environment (Nelson, 2017), and the way that risk perception is rooted in

knowledge production and so inevitably political and variable across social contexts and power locations (Bee, 2016).

In the United States, political ecology has been used to explore the politics of landscape, environmental risk in the context of economic change, and how natural resource management policies are underpinned by competing ecological imaginaries and types of environmental knowledge (Walker and Fortmann 2003; Walker and Hurley, 2004; Hurley and Walker, 2004; Collins, 2008; Larsen et al., 2011). In the context of rural communities experiencing a transition away from resource extraction and towards amenity-based economies, this conflict can be conceptualized as one between livelihood and lifestyle landscapes (Collins, 2008), the outcome of which is indicative of which constituencies enjoy political power and thereby the power to define how a particular landscape “should” look. Collins (2008) examines the political ecology of differential vulnerability to wildfires in Arizona’s White Mountains, focusing on how political economic arrangements facilitate the ability of powerful groups to enjoy security to exploit environmental opportunities associated with hazardous places for private gain. This tendency is reflected in other so-called natural amenity destinations in the U.S. West, where amenity migrants and the industries they create are able to capitalize on a particular sense of place and commodify the landscape in new ways (Hurley, 2013).

Currently, the political ecology perspective is relatively underutilized in the study of the human dimensions of insect disturbances. Without explicitly adopting a political ecology approach, Müller (2011) invokes certain themes of political

ecology as he focuses on landscape as a cultural object, the symbolic meaning of disturbances and the socio-cultural reverberations of bark beetle outbreaks in Germany. His case study explores the symbiosis between landscape ecology and socio-political forces in discussing how the image of the disturbed landscape becomes symbolic of the fraught political process of forest management, and the deep cultural, identity-based significance of landscapes to local groups. In a similar vein, Davis and Reed (2013) explore the qualitative social dimensions of multilevel forest governance in the context of the MPB outbreak in British Columbia, including the implications such governance has for entrenching existing social inequalities. They focus on the particular salience of memory and identity in informing experiences of governance, arguing that these concepts offer arenas for exploring the relationships between society and the environment.

Recognizing insufficient attention to the socioeconomic, political and cultural forces that contribute to insect disturbances, Petersen and Stuart (2014) engage a political ecology perspective to consider the MPB outbreak in British Columbia, regarded to be the most severe beetle infestation in recorded North American history. The authors argue that too simplistic a link has been drawn between global warming and bark beetle outbreaks, effectively removing attention from the roles played by global market pressures and local extractive industry practices. In the case of British Columbia's outbreak, they argue that the scope and intensity was due to the timber industry's privileging of short term economic gains by seeking to harvest unaffected old growth stands over the less

profitable, beetle affected timber, thus inhibiting the potential for timely regeneration and exacerbating the effects of the outbreak to forest communities.

An intellectual root of political ecology lies in the study of hazards and disasters as influenced by global political economic structures (Collins, 2008). This perspective critiques the emphasis of conventional hazards research on behavior, placing more emphasis on the affect that social inequalities have on informing risk and affecting the capacity to cope with loss (Watts, 1983; Hewitt, 1997; Oliver-Smith and Hoffman, 1999; Bolin and Stanford, 1998; Wisner, 1993). Vulnerability to environmental risk relates inevitably to power, and refers to the combination of factors that influence the degree to which someone's "life, livelihood, property or assets are put at risk by the occurrence of a hazard event" (Collins, 2008, p. 25). An actor group's perception of risk associated with environmental change is indicative both of their construction of the local environment and their own identity. This focus on identity, micro-politics, and their symbolic constitutions reflects the post-structural turn in political ecology.

Conceptual Approach

The social construction of environmental change. As environmental disturbance occurs in a region characterized by diverse and evolving actor groups, the meaning of disturbance, the risks experienced and the various understandings of causality are as much about actors' own self-definitions as their definitions of the physical environment (Greider and Garkovich, 1994). As opposed to a reified "generalized environmental other," the changing forest landscape is understood as a dynamic, symbolic environment that is constructed

via the resources of local culture. Culture similarly equips actors with the tools to renegotiate their own identity and relationship to the natural world in the context of environmental, social, and economic change. Moreover, the landscape is not simply an evolving reflection of human desires but is understood as agentic in its own right – able to reorder relationships, meanings and institutions as it changes. Engaging with the way that competing discourses of nature are produced by different actor groups also requires attentiveness to the way that power (via human and nonhuman agents) functions to promote, suppress, or otherwise inform understandings of landscape.

Green governmentality. Discourse analysis offers an empirical means of exploring the social construction of landscape and elucidating the interaction of material contexts, knowledge, and policy as various actor groups seek to speak for nature and contextualize natural agency within a particular narrative construction. Environmental discourses and the individual narratives they are composed of are fundamentally discourses of power, producing particular environmental subjectivities and individual level experiences of environmental phenomena in the course of their exercise. This perspective, which draws on a Foucauldian interpretation of disciplinary power has been referred to as “green governmentality” (Rutherford, 2011). It seeks to interrogate the sort of stories that are being told about an environmental event, the consequences of those tellings for understanding how individuals and communities interact with environmental disturbances, and the various cultural, political, and economic factors that inform the attribution of causality. Such discourses and narratives then, in line with a

Foucauldian understanding of power, are fundamentally productive (rather than repressive) forces, producing normalized truths and subjectivities. Furthermore, local narratives of environmental change and the broader global discourses they uphold are not simply stories, but are created relationally by the interaction of individuals and communities with their material and institutional contexts and with sources of information. In such contexts, the public are not passive consumers of information, but active and skeptical, challenging expert knowledge and contributing local knowledge (McFarlane et al., 2015; Burns et al., 2003; Stilgoe et al., 2006; Árvai, 2014). Reflecting a subject's unique positionality and experience of vulnerability, risk perception is the consequence of negotiated meanings that incorporate social, cultural, and political dimensions (Burns et al., 2003). Tracing different narratives of risk across networks of actors provides a way to analyze how different understandings of the same event carry different weight in management decisions, and can be linked to different socioeconomic, cultural, and political contexts.

In this work a political ecology perspective is engaged to explore the political dynamics, among both human and nonhuman agents, that underpinned both the outbreak itself and the narratives, experiences and understandings of affected groups. As a community of practice, political ecology understands the nonhuman world as agentic and fundamentally in-process, much like the social world. It seeks to engage with this ongoing, processual becoming wherein perceived things (trees, beetles, wildfire, etc.) are not discrete things-in-themselves but complex, dynamic relations. These relations integrate social and

nonhuman forces and actors and are represented by the ephemeral fusion and embodiment of complex elements that come to appear at a particular moment and from a particular vantage, as a single environmental phenomenon (Robbins, 2011, p. 94). Considered in this way, narratives of the disturbed forest landscape constitute the fusion and embodiment of regional social change, consequent forest policy informing the age and composition of the forests themselves and embodied experiences of forest change for human actors in communities across the region. Attending to the role played by images and representations in political struggles over natural resources reflects the post-structural turn in political ecology, and the way that perceptions of landscape vary across different social locations (Nygren, 2004).

Within the body of political ecology literature there are several examples of where discourses were explored to produce knowledge of dynamic actor networks in the context of environmental change, including an account of a controversial ecological restoration project in Missouri where river otters disrupted established scientific scripts deployed by management officials in the state, creating dynamic and shifting linkages among emergent actor groups, including local landowners, anglers, scientists, animal rights activists, fish, and otters (Goedeke and Rikoon, 2008). Similarly, Bixler (2013) explores understandings of mountain caribou decline and conservation efforts in southeastern British Columbia through local narratives, connecting changes in the local landscape to positioned observers via narratives of attribution which correspond to global environmental discourses. Schlosser (2006) explores the

discourses deployed to construct the Arctic National Wildlife Refuge as a “landscape of sacrifice” or “pristine sanctuary,” with different interests offering distinctly different descriptions, and visual representations of the landscape, and enrolling indigenous narratives in discourses only to the degree that they support the existing pro- and anti-drilling positions.

A critical point of analysis in this work is the way this power is wielded across both social and ecological systems, by both human and non-human actors. Political ecology’s environmental conflict and exclusion thesis recognizes the conflict and differential risk exposures engendered by environmental change as it occurs at multiple levels (Robbins, 2011). As a consequence of the scarcities generated by economic change, resource enclosure, and appropriation, ecological conflicts become socialized and social problems are ecologized as groups characterized by differing levels of political and economic influence see their priorities differently represented in natural resource policy. This ecologizing of social disparities is visible in the shifting economic context of northern Colorado, from extractive economies and landscapes of production towards service and amenity-based economies and landscapes of consumption. Such a transition engenders competition between different forms of rural capitalism, class conflict, distinctly different constructions of nature, and implies the classed nature of environmental struggles (Walker and Fortmann, 2003). Yet while the forest landscape is subject to the material effects of shifting institutions and cultural values enacted by management regimes, it retains agency to

challenge prevailing understandings and the basis upon which it is valued, as in the case of natural disturbance.

A consequence of the conflicts engendered by environmental and socio-economic change is the formation of new political subjectivities based on exposure to environmental risk, interactions with environmental policy, and embodied experiences of environmental change. As policy mediates socioeconomic conflicts, it is also possible to see how such policies come to produce particular kinds of environmental subjects. When policy emerges from contested ecological and socio-political terrain, it comes to affect individual political identities as these identities are linked to basic issues of livelihood and environmental activity (Robbins, 2011). These livelihood issues and emergent political subjectivities are articulated in narratives of environmental change. Discourse analysis offers a means of exploring the formation of environmental subjects as they interact with their social, institutional, and material contexts.

Methods

Study region and communities. The MPB outbreak in Colorado at the turn of the 21st century affected 3.4 million of acres of lodgepole pine and ponderosa pine trees. In particular, the forests of Summit, Jackson, and Grand counties were heavily impacted (Hackett, 2007). Consistent with the ecology of forest insect disturbance, this beetle outbreak has played a part in increasing the risks of other natural disturbances such as wildfires and invasive species.

Summit County and the communities of Granby (Grand County) and Walden (Jackson County) were selected to represent three economic ideal types.

Summit County is home to several smaller municipalities that are situated close together, and much of their governance occurs at the county level. These community economies represent distinct positions in the ongoing regional economic transition in the mountains of Colorado, ranging from high-amenity luxury resort towns (Summit County), to rural communities with strong ties to extractive industries such as logging and ranching (Walden), to communities occupying a space somewhere in the middle of this transition towards the new, natural amenity capitalism of the U.S. West (Granby). These communities also differ in their proximity to forests infested with beetles and intensity of disturbance. In Summit County, the community is more heavily forested. Forests in Summit County also have a somewhat greater mix of tree species that may mitigate the impacts of beetles. The central business districts of Granby and Walden are located in open park-like valleys, but many residents live much closer to, or in, the surrounding forests which were more heavily affected by beetle activity.

As an international amenity destination, Summit county typifies the “New West,” with its highly educated, high income residents, overwhelming economic reliance on entertainment and recreation and relative absence of forest industry (NWCCOG, 2010). Between the 2000 and 2010 censuses, the county has grown in population by nearly 20 percent and, being located along a major interstate (I-70), consistently sees seasonal, short-term and weekend visitors from the also expanding Denver metro area. White River National Forest, in Summit County, is the most frequently visited national forest in the country, attracting a record 15

million visitors in 2017 (USFS).

Similar to Summit County, Granby grew nearly 20 percent during the first decade of the 21st century. While the community is historically extraction-based, its growth is part of its transition towards an amenity-based economy with increasing popularity among seasonal visitors and short-term, weekend visitors from the Denver metro area. The west and north parts of the county retain more of an agricultural orientation and are home to larger ranches while the east part of the county, closest to Summit County, is more amenity oriented and characterized by smaller parcels of land.

The community of Walden represents a stark departure from the bustle of Summit County in every measure. Residents proudly point out that there isn't a single stoplight in all of Jackson County. During the early days of European settlement in the area, Jackson County (named for Andrew Jackson) was referred to as "the bullpen," the name the local Ute people gave to the expansive valley where moose, deer, elk, and other game still congregate. While Walden lacks the international draw of more amenity-oriented communities, it does bring visitors for hunting and fishing and is known as the "moose viewing capital" of Colorado. Despite being a small town to begin with, it is shrinking, decreasing in population around 10 percent between 2000 and 2010, while the population in the state has expanded rapidly. The economy is solidly extraction-based, increasingly oil and gas focused, and residents have less income and education compared to the rest of the region. Walden and Jackson County residents are staunch in their support of such extractive industries. This was evidenced in a

fieldtrip to the region in October 2018 which preceded the midterm elections. At this time, a proposition to drastically increase the “setback” space between natural gas extraction operations and most public places was on the statewide ballot. The passage of the proposition would have meant the elimination of many operations and opportunities for industry expansion in the state. Traveling across the metropolitan Front Range and Summit County, signs in support of the proposition were ubiquitous, while in Walden, nearly every home and business displayed a red sign reading “Jobs Matter! Don’t set Colorado back! VOTE NO on Proposition 112.”

Another cultural indicator across the region is the local prevalence of medical and recreational marijuana dispensaries. In Summit County there are seven marijuana retail establishments, with “marijuana tourism” providing a new draw to the area. While still present there are fewer dispensaries in Grand County, but Jackson County (along with many rural counties throughout the state) has banned the establishment of marijuana dispensaries. The largest hotel in Walden, the Antlers Inn, has a prominent sign in its entryway indicating a zero-tolerance policy for marijuana possession or consumption on the premises.

Figure 7. Breckenridge resort in Summit County (photo: Breckenridge Resort)

Figure 8. Downtown Granby (photo Sky-Hi News)

Figure 9. Downtown Walden

Table 1 describes basic demographic characteristics for the region, as captured by the 2010 census. Amenity-based occupations include employment in

the arts, entertainment, recreation, accommodation and food service. Extraction-based occupations include agriculture, forestry, fishing and hunting, and mining. For Summit County and Grand County, extraction-based occupations were not among the top five local industries, so no data is reported.

Table 1. Socio-demographic Differences Between Study Sites

	Summit County	Granby	Walden
Population	27,994	14,843	1,394
Median Age	36.4	41.2	47.3
Amenity-based Employment	30.1	17.2	13.5
Extraction-based Employment	-	-	16.0
White	89.6	93.5	92.5
Second Homes	60.6	59.7	51.2
Bachelor's Degree or Higher	48.1	28.8	21.7
Median Household Income	64,986	60,433	37,222

In 2006 – 2007, the communities of Granby and Walden and Summit County (including the individual municipalities of Breckenridge, Dillon, Silverthorne, and Frisco) were included in a regional survey regarding community experiences, risk perceptions, and responses to the MPB disturbance (Flint et al., 2012; Qin and Flint, 2010; Qin, 2016). Consistent with the census data above, survey respondents in the lower-amenity communities of Granby and Walden were relatively older, of lower income and education, and had resided in the communities for a longer period of time than residents of the other communities. Summit County was distinguished by having the largest majority of second-homeowners, high average household income, high educational attainment, low levels of employment in forest management, forest industry, or agriculture, and relatively liberal political views (Flint et al., 2012).

This clustering according to socio-demographic and economic indicators

was seen to correspond to a clustering of attitudes and ascriptions to particular paradigmatic views about the health and appropriate management of the forests (Flint et al., 2012; Qin and Flint, 2010; Qin, 2015): a more preservationist, minimal intervention approach among communities like Summit County that typify the “New West” (Winkler et al., 2007), and an approach that supports a greater degree of intervention and utilization of industry options among the less affluent, more timber dependent communities typifying the “Old West.”

Research Design. This study uses an ethnographic case study methodology and interpretive critical discourse analysis to produce thick descriptions of the dynamics and interactions of environmental knowledges, politics, and management decision making (Davis and Reed, 2013; Denzin and Lincoln, 1998; Yanow and Schwartz- Shea, 2006; Adger et al., 2003; Rutherford, 2011). The ethnographic case study approach is appropriate for gaining nuanced and contextualized knowledge of particular, bounded socioecological systems. An understanding of the nested power dynamics implicit in the disturbance and response is achieved through attention to the discourses of local and regional actors. Through this interpretive framework, it is hoped that the knowledge produced through direct observation of particular disturbed and power-laden socioecological arrangements will be generalizable to other disturbed socioecological settings. This analytic connection between local narratives and global political economic forces reflects the assumption that ethnography of cultural formations such as narratives of environmental change “in the world system, is also an ethnography of the world system” (Marcus, 1995, p. 99).

The first phase of the study consists of a media and organizational archive analysis of news articles, editorials, letters to the editor, and public notices related to the MPB outbreak appearing in community newspapers (The Summit Daily, Sky-Hi News, and the Jackson County Star), and Colorado Timber Industry Association, Sierra Club, and Wilderness Society (environmentalist NGOs) articles, public statements, and newsletters during the years surrounding the peak of the outbreak (2005 – 2015). Documents were collected and thematically coded according to the way the outbreak was framed. Specifically, framing was assessed according to (1) whether the outbreak is problematized or perceived to constitute a risk, (2) the narrative of causality offered, and (3) the proposed course of action. Concordant with this phase, policy documents issued from the U.S. Forest Service and Colorado State Forest Service during the peak outbreak years were collected and analyzed to assess the official framing and narrative of the outbreak and the actions undertaken in response.

Once context was established via these unobtrusive measures, the next phase of data collection allowed for a more subjective, phenomenological approach to understanding the disturbance and its various corresponding narratives. During fieldtrips in October 2018 and June 2019, 26 interviews were conducted with key informants representing actor groups across the study region. These included Colorado State University Extension, the Colorado State Forest Service, the Wilderness Society, the Forest Health Task Force, local politicians, local newspapers, conservation groups, loggers, and members of forest planning groups. In June 2019, the region was visited to attend a

community forum in Summit County where members of a local collaborative group were presented with findings from a broader longitudinal study assessing community perceptions and actions in response to forest change. This allowed the opportunity to engage a wider audience in the area in a conversation about forest changes and the extent to which forest management is approached differently by different communities across the region.

In personal interviews during both trips, to the degree that participants were willing, an effort was made to have many of these interviews take place somewhere outdoors (on a walk or on a drive), to allow the opportunity to observe the participant interacting with the place we were discussing. This allowed me the perspective of a participant observer and brought the interviewee into fuller contact with the environment, centralizing it in their recollections. As interview data is gathered reflexively and in light of unique situational factors, interviewees were not expected to provide succinct answers, but illuminate themes and explore experiences. These discursive interviews were understood and their contents analyzed as co-constructions, referring to the process through which the researcher and the interviewee create knowledge in a particular, informing context (Gobo, 2008). Interviews were not approached as the gathering of objective data on the part of the researcher or completely attributable to the interviewee, but understood as the product of interaction and conversation wherein all parties are engaged and taking part in the production of knowledge via “positioned utterances” (Clifford, 1986, 12).

A list of questions was developed related to the participant's own identity and experience of ongoing changes in the community and across the region, the forest disturbance, and their perspective on how the disturbance was understood and experienced by different actor groups. This list was developed to provide a platform for conversation, but an effort was made to minimize the projection of any hypothesized narrative and rely on the context and verbal probes to facilitate the conversation. By these means interviewees were engaged in a subjective recounting of their lived experience of a place undergoing ecological and political economic transition, and it became possible to link a more theoretically structured analysis to a subjective, embodied one.

Following the field trip, interviews were transcribed and thematically coded to identify emergent narratives of risk and causality, and symbols of the connection between local groups and the lived environment. These emergent narratives are presented with the context provided by the media and policy analysis to explore the unique discursive constructions of the local environment and experiences of forest disturbance, and the way these constructions conflict or overlap with popular and official narratives, as well as forest management policies in the region.

These methodological choices were made in an effort to *follow the story* of the forest disturbance via situated, lived experiences and reflect the turn towards multi-sited ethnography described by Marcus (1995) and Tsing (2015) as well as the post-structural turn towards the day-to-day “rough and tumble of environmental politics” in political ecology (Watts in Walker 2005, p. 75). The

perspective of comparing community narratives and their linkages to ecological, political and economic contexts fulfills the understanding of ethnography as a research design of juxtapositions, where the researcher engages in a circumstantial activism in their selection of sites and consequent analysis (Marcus, 1995).

What follows first is a description of how the meaning of the image of the landscape varied across social groups, symbolizing subjective experiences of ongoing change that reflect the cultural and economic positionality of subjects. This is followed by a chapter that explores the competing narratives of causality offered for the decline of the timber industry in Colorado by different constituencies, and a history of how official constructions of landscape and land management in Colorado evolved over the course of the 20th century. Finally, I explore the way that scales and understandings of property combined with the looming threat of wildfire produced specific experiences of risk for actors across the extraction-to-amenity spectrum.

Culture Clash and Narrated Images

From a vantage point in the Williams Fork Mountains, the Gore Range's skyline cuts a rugged shark-tooth profile across a clear mountain sky.

The eye is drawn to the sharp relief of the range's peaks, but as the gaze drops below tree line, the picture becomes eminently more troubling.

Where a lush blanket of greenery once nestled up against the alpine tundra, a rusty, scabrous pall spreads across the range's sub alpine forests. (Shell, 2015)

Introduction

Mountain Pine Beetle is endemic to Colorado forests, however the outbreak at the turn of the 21st century was unprecedented in scope and intensity; its severity was compounded by years of drought immediately prior to the outbreak, and nearly a century of management policies that excluded natural disturbance, in the form of fire, from the disturbance-dependent landscape.

Over the course of the infestation, affected trees (usually evergreen) turn rust red before losing their needles and eventually falling over as their roots decay; dense stands of 100-150-year-old lodgepole and ponderosa pine give way to gray “ghost forests.” The change to the image of the landscape evoked strong feelings among various contingencies of local people and disrupted previously static understandings of the landscape and the socio-natural relationships it contained. These images and understandings continue to evolve as the forest regenerates in new and different ways.

Complicating the meaning of the image of the landscape across groups is the fact that Colorado is situated at a vanguard of the cultural clashes produced by ongoing global economic restructuring and a massive influx of amenity

migrants and second-homeowners. Amenity migrants bring with them particular understandings and expectations for the landscape and preferences with regard to land management. For many newcomer residents not reliant on extraction or agriculture as a means of economic security, the forests are “our national heritage” and exist as the embodiment of what Cronon (1996) calls, “the frontier myth,” desirable for the human influences they supposedly lack and the exclusivity they promise. These attitudes, and the broader social constructions of nature that they are underpinned by often clash with those prevalent in communities that are reliant on natural resource extraction and the production of primary commodities. For residents of historically extraction-based communities like Walden, the forests are understood as renewable natural resources: the raw stuff of the American Dream to be transformed into economic security by “sweat equity” and grit. These residents can often trace their family’s history in the area to the early days of settlement in the American West, and the remnants of log stables and homes that were built in the late 1800’s on 160-acre Homestead allotments can be found throughout Jackson County. They tell stories about their ancestors’ confrontations with the Ute tribe during settlement, the American Dream made manifest in the timber and ranching enterprises of the early 20th century, and the systematic loss of that dream through cultural and land management policy changes leading up to the turn of the 21st century. Both constituencies appeal to nationalistic sentiments for legitimacy as they seek to make and remake the forests in their own image; recapitulating the themes and

discourses of both wilderness purity and manifest destiny that have underpinned public land management throughout the settled history of the United States.

The transition from extractive economies to amenity-based economies is a defining feature of the contemporary American West. It is a transition that has implications for the way ecological change is understood and how experiences of environmental risk are unequally distributed across groups. Exploring local narratives of the disturbed landscape can help illuminate how different groups situate themselves with respect to the local environment, how they experience and understand ongoing economic changes and related implications for land management, and how the image of the post-disturbance landscape reflects and corresponds to their particular environmental subjectivity.

Across the region, narratives focused around making sense of the changing image of the landscape and the extent to which the visual changes disrupted or validated what constituencies had believed about the health and management of the forests, and elicited new modes of engagement with the forests as dynamic socio-natural systems. As they emerged from specific socio-ecological contexts, narratives emphasized the way visual changes elicited an ongoing shift in political ecological imaginaries, the way the outbreak provided an occasion for new, embodied engagement with the forest, and the degree to which experiences of forest change were mediated by local, regional, and global institutions. These personal and community narratives regarding the changing image of the landscape contend with the official narratives of explanation presented by the Colorado State Forest Service and U.S. Forest Service.

Official Narratives

In 2000, relatively early in the Mountain Pine Beetle outbreak, the Colorado State Forest Service (CSFS) began publishing an annual Colorado Forest Health Report. The annual reports from CSFS and periodic, issue-specific reports on Colorado forests from the U.S. Forest Service draw on ongoing research and aerial surveys throughout the state to present a definitive assessment, a definitive narrative, from which management decisions can be made regarding deemed threats to Colorado forests, priority areas, and plans for future use. The reports are presented as the result of collaboration of CSFS with state and federal forest managers, Colorado State Extension, local and regional government offices, and researchers at Colorado State University and the University of Colorado. As described in the 2009 report:

The purpose of the annual forest health report is to provide a credible, scientifically sound basis from which to engage in public dialogue regarding the future of Colorado's forests. It is in this public arena that the needs and values of Colorado's forests will be evaluated so decisions can be made regarding future management and investment of resources. (CSFS, 2010, p. 2)

Such reports draw on biopolitical practices that aim to render the forests knowable, calculable, and ultimately manageable as ecological relationships are transmuted into statistical data, images, and graphic representations: reconstructed as an object of analysis with management being a key aspect of governance (Demeritt, 2001). These forest health reports recall the panoptical history of forestry as a colonial project aimed at surveilling forests and forest change in order to maximize the yield of species that served colonial power, as

they characterize the changing forests as containing as much of an economic threat as an ecological one and refer consistently to the economic dependence of the state and region on the condition of, and the public perception of health in, the forests (Agrawal, 2005).

In the years surrounding the peak of the MPB outbreak, the disturbance was of the utmost concern and the primary focus of CSFS reports. Reports from the state and U.S. Forest Service presented official narratives of causation, assessments of potential social and ecological consequences and recommended actions to be taken in response to the MPB disturbance and specifically the changes to the image of the landscape.

Causes

The Forest Service's 2011 report to Congress on the causes and agency response to the outbreak describes how the character of insect disturbances throughout forest types is changing. It describes how "bark beetles are killing trees in larger numbers, at faster rates, over longer time periods and over larger areas compared to outbreaks recorded over the past century" (USFS 2011, p. i). The changes are partially attributed to a changing climate, as warming temperatures affect the lifespan and propagation rate of beetles, and drought throughout the region creates stress for already vulnerable mature trees. But policy and management factors figure into the official causal narrative as well. The report describes how funding for pre-commercial and commercial thinning on Forest Service lands to reduce stand density during the decades leading up to

the outbreak did not keep pace with the rate at which the infestation spread. The limited accessibility of terrain due to steep slopes and expansive roadless and wilderness area designations where mechanized treatments are prohibited also precluded stand-diversifying efforts that arguably would have inhibited the swift spread of the outbreak. Exacerbating the ecological and logistical challenges, official narratives cite the decline in the public acceptance of large-scale timber management practices in the latter part of the 20th century. The decline in public acceptance for timber harvesting from public lands resulted in a contraction in the regional timber industry, the effects of which were compounded by the relatively low commercial value of pine, and international market forces making it cheaper to import wood from Canada and other countries.

The Forest Service describes how the susceptibility of forests to MPB infestation was recognized early in the 1990's and was cited as rationale for vegetation treatments and proposed timber sales and timber stand improvement projects (i.e. thinning) in the years preceding the beginning of the outbreak, but those efforts were thwarted by public perceptions. The report states:

In the 1990's, vegetation treatments in lodgepole pine stands that would have increased resiliency to drought or insect attack (timber sales and stand improvement projects such as thinning) lacked public acceptance. These practices, which increase growth rates and vigor of individual trees by reducing competition, were routinely appealed and litigated. This hampered the ability of the Forest Service to address stand conditions susceptible to outbreak. (USFS, 2011, 5)

This period preceding the outbreak coincided with a rapid expansion of wilderness and roadless area designations in the state. This policy shift reflected

the growing public preference for a transition away from national forests with their multiple-use forest management plans, towards the preservation of public lands.

Consequences and Recommended Actions

Once the infestation was underway, state and federal management officials conveyed that managing public perceptions of forest changes was of primary concern since curbing the actual spread of the outbreak was not possible. Images of the changing forest appear throughout official state and federal reports to draw attention to the extent of mortality and the rate of expansion, and to promote the official narrative that more active management in preceding decades would have curtailed the effects of the outbreak. Often, reports contain images of huge swaths of beetle-killed forest alongside images of thriving young pine and aspen trees in more actively managed areas. Aside from the ecological implications of the disturbance, with a growing sense of urgency around the peak of the outbreak, the changing *image* of the landscape is noted as cause for concern. The 2006 State Forest Service report reads, “the resulting landscapes may not meet society’s desires and needs and could be even less appealing than those created by the current mountain pine beetle epidemic” (CSFS, 2006, p. 3).

When the outbreak began in the mid-1990’s, it was the changing image of the landscape (from green to red) that began to challenge ideas of forest health and elicited a shift in attitudes about forest management. The changing image of the forest and loss of culturally and economically valued aesthetics brought about

the increased “social license” for active mitigation work that forest managers frequently referred to in interviews.

Many did not believe, looking at green trees that had been attacked by bark beetles, that they had actually been killed. That realization came a year later, when the trees turned red. Public acceptance of active forest management (also called social license) increased as people witnessed the scope of the outbreak and its rapid rate of spread, but by then it was too late to implement active preventative management measures. (USFS, 2011, p. 5)

At the peak of the outbreak and in subsequent years, Colorado State Forest Service annual reports make calls for thinning and diversifying forest stands to pre-settlement densities and diameter distributions as a substitute for the natural processes of forest succession that have been suppressed since settlement in the late 1800’s (CSFS, 2005). The MPB outbreak is presented as an example of the consequences of reactive rather than proactive management. Parallels are drawn between lodgepole and ponderosa pine dominated forests and other species. In an issue specifically devoted to the health and management of aspen forests, CSFS authors write that, “unlike the mountain pine beetle situation, we still have the opportunity to be proactive in the management of Colorado’s trademark aspen forests,” and later, “less than a quarter of Colorado’s lodgepole pine trees are small enough to be resistant to mountain pine beetle. Without forest management, future landscapes will be vulnerable to another widespread outbreak” (CSFS, 2005). The more active management paradigm CSFS promotes in Colorado forests, would include “harvesting timber, removing poor quality or low-value trees, forest thinning, prescribed fire and regulating development within fire prone forest types” (CSFS,

2008, p. 6). This framing of the MPB outbreak as attributable to inadequate management in the midst of increasing pressure from climate and decreased industry capacity appears consistently throughout official narratives. It becomes clear that management action has been stymied by public pressure and to that end an admonishing tone appears at the end of a letter from the chairperson of the Colorado Forest Advisory Board in the 2004 CSFS report:

As members of Colorado's Forestry Advisory Board, we encourage all Coloradoans to better understand the natural processes and human decisions that influence the condition of our forests – and support proactive treatments that improve that condition before negative impacts occur. (CSFS, 2005, Introduction)

A significant potential outcome of the disturbance identified in official accounts is widespread drinking water contamination, as the epicenter of the MPB activity is located at the headwaters of Colorado's and 13 other western states' drinking water supplies. Along with the effects to air and water, official narratives repeatedly emphasize the precipitous effects that expanses of beetle-kill forest can have in creating ripe conditions for wildfires that, in an already drought-stricken environment, are predicted to exceed historic levels and intensities.

The causal link between beetle-kill and fire is disputed by other actors in the region, but dead forests are presented as inherently hazardous by public land managers, with the effects of the beetle disturbance to the forest creating exceptionally challenging firefighting conditions. Particularly in the Wildland-Urban Interface, or WUI, where houses and other infrastructure are situated

closely to forests, the accumulation of dead trees continues to be cause for serious concern. The abundance of dead trees changes the character of forest fuels and does so in dynamic fashion, with the greatest risk of high intensity fires occurring within five years of the tree's death when the needles are red and still attached to the branches. As red needles and smaller branches fall from standing dead trees and those standing trees eventually fall as their roots decay, large, "stand-replacing" fires become possible. In this new environment the accumulation of downed trees makes on-the-ground firefighting difficult or impossible.

When the outbreak began, the dynamic nature of fire risks over the course of the disturbance and consequent forest changes had not been identified. Research done at Colorado State University in the late 2000's worked to identify distinct phases of risk and nuance understandings of the link between the two disturbances. Official narratives came to frame the color of the forest as a key signifier of evolving fire risk, with phases of risk delineated by the changing colors of needles. Phase I is referred to as "Attacked Green," Phases II and III are "Attacked Yellow" and "Standing Dead Red." Phase IV is "Standing and Fallen Grey," and Phase V is "Fallen Grey and New Green." These phases are delineated by foliar moisture content and ignition time for individual trees, but the Forest Service notes that as the region enters uncharted ecological territory, models for fire behavior in individual phases at the landscape level have not been developed.

The central issue discussed in forest health reports for a decade, by the end of the 2000's, MPB is nearly absent from official reports. At this point nearly all of the mature pines in the region had been killed, and as prime host material diminished, beetles increasingly turned to younger, more resilient trees, and managers turned to other forest threats.

Not all lodgepoles are dead, nor will they be. The majority of trees less than 20 or 40 years old should survive the epidemic. Young, green, regenerating forests can be found where forest management activities were conducted in the last several decades, providing a stark contrast to surrounding unmanaged forests. (CSFS, 2009, p. 17).

In subsequent literature, official narratives of the changing landscape continue to present any enduring patches of green forests as symbolic of more active management paradigms and the cultural and political context that enabled them. The younger stands in areas that were clear cut decades earlier and proved resilient to the beetle disturbance are presented as evidence of foresight to be considered against the expanses of “ghost forest” where disturbance was excluded. Immediately before and early in the outbreak, the Colorado State Forest Service cut timber in the Colorado State Forest in Jackson County (the only public land managed by the Colorado State Forest Service) to demonstrate the effects to the forest over time. An image included in 2010 annual report shows pockets of green amidst expanses of dead trees in with the caption:

Clear cut timber harvests conducted between 1988 and 1998 at the Colorado State Forest near Gould created pockets of young green stands, between 10 and 20 years of age. These young stands are surrounded by gray beetle-killed mature lodgepole pine stands between 70-90 years of age. The active forest management

practices employed 10 and 20 years ago have improved the resiliency of these lodgepole pine stands. (CSFS, 2011, p. 8)

Figure 10. Aerial image from 2010 CSFS Forest Health Report showing beetle-kill and clear-cut regeneration in Jackson County, Colorado (photo: Duda)

Local Narratives

Shifting Political Ecological Imaginaries

The literature on amenity migration discusses the linkages between demographic characteristics of migrants, their political affiliations, and their cultural attitudes about land management. In amenity destinations in the American West, “ex-urban” migrants have characteristically espoused more preservationist views regarding public lands, placing relatively more emphasis on maintaining landscape-level aesthetics, and engaging with the local environment

as a site of respite and recreation. This experience and expectation of the landscape is situated in a political ecological imaginary that understands the environment as an externalized object in need of protection from human activity and influence.

Particularly in the more amenity-oriented communities of Summit County and Grand County, narratives of the disturbance and the new image of the forest emphasized the degree to which these political ecological imaginaries shifted in the context of the forest disturbance. Narratives emphasized the extent to which the outbreak required a renegotiation of expectations for the landscape and revision of what image or aesthetic symbolized the peace and natural equilibrium residents sought in forests. This shift was elicited by the way the intensity of the outbreak, and the striking visual effects, challenged static assumptions of health in the forest.

When the outbreak was nearing its peak after a swift expansion across the region in August 2006, an article appeared in the Summit Daily in which Forest Service District Rangers for the forests surrounding Summit County discussed the way that people's assumptions of forest health were challenged by the increasing numbers of affected trees and "stacks of dead pines" being produced by mitigation efforts.

Bowden and Wettstein both acknowledge that people have a hard time squaring the current view of the forest with their expectations. After all the beetle epidemic has progressed quickly, greatly altering the look of the forest in just a few years.

"We didn't anticipate this mortality rate, with tens, hundreds of thousands of dead trees," Wettstein said. "It's outrun our planning process." (Miller, 2006)

The District Rangers point to an area that was clear-cut in the 1970's that has regenerated and "looks pretty healthy" relative to the surrounding forest. They note how following smaller pine beetle outbreaks in the 1970's and 1980's entomologists recommended clearcutting large swaths of the forest to stimulate new growth and forest diversity.

The suggestion was to cut some 52,000 acres of forest between Vail and Summit counties, he said, but only about 1,200 acres were cut in that period.

"The entomologist predicted this exactly," Wettstein said. "But the social and political atmosphere being what it is "here we are."
(Miller, 2006)

For many throughout the region, the visual effects of the infestation evoked a need to come to terms with the knowledge that the image of the forests that many longtime residents had grown up with, and that many new residents had relocated for, was more precarious than presumed as the forests were overdue for a sweeping disturbance of this nature. The outbreak disrupted the idea that the forests were healthy or that the image of the forest would remain relatively static amidst the rapid population growth, associated forest fragmentation and a century of wildfire suppression. In Grand County, with its more recent roots in logging and ranching, a connection between the scope of the disturbance and the regional shift towards landscape commodification and consumption over traditional land uses was readily identified in local discourses. An opinion piece appearing in the Sky-Hi News in April 2013 read:

The Mountain Pine Beetle has always been around; we created the conditions that led to the massive epidemic. It doesn't matter that

climate change may have played a part. Our lodgepole forests were past reasonable life expectancy.

We created the conditions for the Mountain Pine Beetle epidemic in our forests by 100 years of fire suppression and not replacing what naturally dies in spot fires with logging. We got where we are by unwise forest policies for many generations, fire suppression and little logging. We have just experienced the loss of our lodgepole forests. To do better in the future will take the active involvement of more than the forest community. Grand County has always been an active, vibrant community. We don't need to repeat past mistakes. (McDavid, 2013)

Those in management roles in Summit and Grand county noted how the visual changes to the forest required new thinking about socio-natural interactions and a renegotiation of how the image of the forest aligned with local cultural expectations:

For folks if they've lived here for maybe one generation their view of the forest or what a healthy forest looks like is based on those thirty years, but it doesn't really go back to when natural disturbances were in place – the forest looked a lot different than it does now. (CSFS Forester, personal interview, October 24, 2018).

We got used to having a green overstory – so the canopy above us – was green, and evergreen trees were everywhere across the intercontinental west and that became our cultural expectation, because Grandma had trees like that, and your parents did, and then you were born with the trees like that. [...] and people still didn't understand that this is an unhealthy forest, a healthy forest is different species, types and age class and ours are almost all the same species and all the same age-class – old. (Summit County Extension Agent, personal interview, October 25, 2018)

The Colorado State Forest Service in Grand County primarily manages forests on private land through work with local landowners. Foresters with the CSFS emphasized the challenge in getting new landowners and part-time residents in particular to understand the vulnerability and inherent dynamism of

the landscape. For these residents, the purchase of a mountain home and the social location and experience it signifies meant the purchase of a particular forest image and aesthetic. CSFS foresters referred to the stubborn refrain they heard time and again from residents as the outbreak began to unfold and management entities tried to encourage the removal of susceptible trees from private lands to inhibit its spread: “we moved to the forest to live in the forest.” This refrain was echoed in Summit County, where the environmental education programming of Colorado State Extension sought to discursively reframe the changing landscape in the minds of residents. The agent for Summit County described this as work to create and sustain a new narrative about life in the changing mountains: “my role here [...] is to sell this story that embraces glades, vistas and view corridors.”

For many in Summit County and the more amenity-oriented parts of Grand County, the outbreak brought about the realization that the forested landscape was not a static one, and that in attempting to exclude changes to the image of the landscape through avoiding cutting trees and suppressing fire, the forest will inevitably manage itself and perhaps do so in a way that does not conform to the needs or expectations of residents and visitors.

Forest Health and Forest Agency. When asked about whether the forests in Summit County were healthy, the leader of a collaborative group of Summit County citizens, forest managers and civic leaders alluded to this idea that health is in the eye of the beholder, or a categorical condition rooted in human desires of the landscape:

This is more about the social side, so if everything is left alone, one way or the other whether its fire or whatever disease [...] the bigger consideration is the impact on us as a community, whether it meets our needs or our perceptions of being healthy. (Forest Health Task Force Founder, personal interview, October 26, 2018)

In this way, the visual effects of the disturbance provided an occasion for reimagining the human relationship to the local environment, undermining the boundary between the two that is reified by wilderness and preservationist discourses, and the commodification of landscape aesthetics. Particularly in amenity-oriented areas, changes in the land brought about these new political ecological imaginaries. This shift in understanding and expectations of the forest, and the extent to which it was elicited by visual changes is described by management entities:

There was real resistance to doing any forest management right when Mountain Pine Beetle came through initially and when it was kind of small. But it just kept getting bigger and bigger and I really think that [...] *nature got people to think differently about nature.* (Summit County Extension Agent, personal interview, October 25, 2018)

Regarding social, political, and management changes in Grand County and the region more broadly over the past ten years:

The change was the forest changed. And so, then we as managers changed but then also the people around here have had to change their opinions of logging, of forest health, of fires and fuels reduction stuff [...] perceptions have definitely changed. (CSFS Forester, personal interview, October 24, 2018)

Understandings of the human role in forest health hinged on the changing image of the forest and the normative violation that the expanding swaths of red,

dead trees constituted. Particularly in these more amenity-oriented regions where landscape aesthetics are the basis for the local economy and culture, the disturbance challenged the visual orthodoxy of green forests and the degree to which they had come to exist as a static symbol of retreat from social forces. This discursive shift from an externalized, objectified nature towards one that is more dynamic, and inclusive of transformation and human engagement is reflected in accounts of direct encounters with the new landscape and institutional barriers to such encounters.

Hosed. The shift in thinking was not a totalizing one though, throughout the course of the outbreak, some higher-end neighborhoods in Grand and Summit County remained reticent to embrace changes to the image of the forest surrounding their homes, instead opting to try and mitigate the visual changes associated with the disturbance through actively spraying trees with chemical insecticides. Ironically, these heavy spraying activities were carried out in areas where according to surveys, residents were more likely to identify themselves as environmentalists (Qin et al., 2019). This is not unlike the “lawn people” discussed by Robbins (2012) who rely on large amounts of chemicals to maintain their lawns despite the belief that such inputs are environmentally detrimental. Similar to “lawn people” maintaining individual lawns for the sake of the common neighborhood aesthetic, these residents often commit to spraying trees on their own property because of a sense of obligation (and homeowner’s association pressure) to maintain what is understood as a common neighborhood forest. This action was carried out at great expense, in one Grand County neighborhood

costing more than one million dollars per year for ten years (CSFS, personal interview, October 24, 2018). Ultimately, such efforts have proved to be in vain as those trees that were spared mortality from pine beetles are now proving particularly vulnerable to other disease and insect threats, namely pine needle scale. Additionally, residents in these neighborhoods are now coping with the effects of spraying to groundwater as traces of the chemicals have been found in home water supplies. A CSFS forester described the situation saying, “in the end, they kind of got hosed, or they hosed themselves I guess.” (personal interview, October 24, 2018)

Embodied Encounters and Institutional Constraints

Seeing Green in Different Ways. Environmental subjectivity is the lived experience of environmental knowledge as shaped by power, ideology and agency (Ford, 2019). In the context of the disturbance, power to remake environmental subjectivities emanated from the forests themselves. The embodied encounters with the landscape that the disturbance elicited shifted environmental subjectivities, bringing those who resided in the forests for the seclusion and insulation they offered into a new, more challenging, more present relationship. Such a shift in environmental subjectivity acknowledges the agency of the forest to affect discourses and challenge the basis upon which it was economically and culturally valued. In the context of the disturbance and the response it elicited, forests subverted federal land management and fire suppression policies that were oriented at preserving them in a fixed state and enrolled humans in a more dynamic network of mutual engagement and affect.

Responses to the outbreak on federal lands were encumbered by bureaucratic processes and logistical constraints that garnered significant frustration from many throughout the region. Shadow Mountain, near Grand Lake in Grand County was considered to be “the poster child of mountain pine beetle devastation” (Bina, 2008). The south slope of the mountain is part of Rocky Mountain National Park, and during the peak of the outbreak, residents of adjacent private lands were eager to see the Park begin mitigation work as the threat of fire mounted with expanding tree mortality. With Highway 34 providing only one road out of the area for most of the year, local residents are particularly vulnerable to fire. Despite this, mitigation work on Park land was deemed unfeasible by officials.

Shadow Mountain residents of Grand Lake didn’t hear what they’d hoped for about treatment plans on the south-shore slope of Rocky Mountain National Park land.

They learned there aren’t any [...]

Park policy has been to treat backcountry territory as wilderness, “to allow Mother Nature, who is kicking our keister, do what she does, and she happens to be weeding her garden right now,” [District Ranger] McCutcheon said. (Bina, 2008)

Because mitigation efforts on public lands were limited, much of the response to the outbreak, in the form of removing affected trees and particularly susceptible trees and clearing land around structures to create wildfire defensible space, occurred on private lands. This mitigation work was funded and often carried out by landowners themselves with consultation from groups like the Colorado State Forest Service, Colorado State Extension, and local conservation and fire protection districts. These new, embodied encounters with the landscape

reflected shifting ecological imaginaries and undermined any reified boundary between an aestheticized nature and a local culture of aesthetic landscape consumption.

At the base of Shadow Mountain is Shadowcliff Mountain Lodge, a non-profit lodge and retreat center situated on six acres of forest adjacent to Rocky Mountain National Park. As the effects of the disturbance and fears of wildfire spread, the owners were among the first in the area to begin extensive mitigation work. The owner at the time described the intense, emotional stakes of this experience of actively cutting trees, and the sense of loss that pervaded this period of the disturbance.

Every time I cut a tree I felt a loss....[several second pause] this is pretty philosophical but – I hate it when we send somebody to prison for murder, but some people have to be sent to prison for murder because there is a collective that is entitled to be free, and I think it's the same way with other lifeforms. Sometimes we have to destroy something that we love, or that we have empathy for and care about, in order for the broader community of life to survive. And in that instance, it's the forest, if we want our forests to live then we have to do some cutting, we have to permit the mitigation of some of the ways that they're suffering. [...at Shadowcliff, there's a] trail that's called the laws of nature trail that goes around our property and there are benches where you can stop and we have signs that call out certain of nature's operating principles, and the laws of nature trail is pretty much enshrouded in young lodgepole pines. Well we have to thin those, you know, we don't really want to thin those, but we must, not because of the trail but because to permit the growth of some of them [...] our trees live in different ways and give their life in different ways just like we do. (Owner, Shadowcliff Mountain Lodge, personal interview, October 23, 2018)

Over the course of six years, from 2008 – 2014, the owners removed over 1,000 lodgepole pines from the six-acre property at Shadowcliff. The clearing of beetle-killed trees and susceptible mature lodgepole ushered in visual

transformations that restored a belief in the resiliency of the forest and affirmed the value of the work. Referring to the forest changes and sweeping regeneration that followed:

Holy cow – these big trees that were robbing the nutrients were leaving this wonderful open nutrient water sources, sunlight for all sorts of new trees, now almost exclusively aspen and new lodgepoles. Now the aspen, who were not vulnerable to the infestation, had a head start because they were already growing, and places that we used to have exclusively lodgepole we had exclusively aspen, and we had flowers! We had flowers we had never seen before. You'd come out each spring and it was exciting, and *we began seeing green in different ways*. (Owner, Shadowcliff Mountain Lodge, interview, October 21, 2018)

The extent to which the outbreak and active mitigation worked to create conditions for new life to flourish in the forest is discussed repeatedly in media following the peak of the outbreak. The attitude of those with the ability to respond and witness the regeneration that followed tended to reflect the words of the leading authority on mountain pine beetle ecology to a gathering of Grand County citizens in April 2015: “Yes, it’s awful that the trees died, but hey that’s not so bad” (Shell, 2015).

Institutional Constraints and New Vulnerabilities. The financial responsibility for mitigation work on private lands fell on landowners themselves, with minimal opportunities for cost-shares or other support from public agencies. Thus, the opportunity to participate in the transformation and regeneration was not equally distributed across social groups.

CSFS Forester 1: I have plenty of landowners that we work with that spent hundreds of thousands of dollars to mitigate their properties [...]

CSFS Forester 2: There's still lots of properties that are kind of, either, you know kind of unoccupied lots or defunct kind of homes that are forgotten about that are still, they still have a lot of standing dead, blowing over on top of structures

Prentice: So, what are their options? Someone in that situation? What do they do?

CSFS Forester 1: Oh boy.

CSFS Forester 2: It depends on the size of property I think, the larger properties you can still maybe get some value out of having that wood taken off but a smaller property, that expense is still on the landowner so yeah there's really not too many options aside from doing the work yourself (personal interview, October, 24, 2018)

For many in the region, responding to the outbreak was constrained less by a lack of personal funds and more by institutional factors. For Summit and Grand County these constraints centered around having a majority of absent property owners and a majority public land designation in each county. These realities expose a tension between what have been referred to as “communities of place” and “communities of interest,” where those living in a particular place experience the outsized influence of interests external to the community over day to day life and vulnerability. In this situation full time residents who may mitigate their own properties experience heightened vulnerability to further disturbances and wildfire as their neighbor's vacation property – purchased for the privacy and seclusion offered by a dense forest – remains unmitigated. Here, the disturbed forest, situated physically close to residents without the authority to mitigate symbolizes exposure and vulnerability.

Here [in Grand County] 60 percent of our people are actually second homeowners so they're only up here maybe up to a month a year. So, it's really hard because they're not living here, they're

not feeling that threat level, and so that is something that we struggle with. They wanted the privacy and that's why they built where they built [...] and a lot of places are vacant lots that second homeowners own. So, they don't even have a residence here they just hope to at some point in the future, but they bought just a lot. Well, that lot is covered with trees. They're not here because they don't have a house up here but the people around them who do live here, they're like "oh my gosh this lot is a huge fire hazard!" It's going to directly affect us, and they can't even, they can't trespass to go over there. (Middle Park Conservation District Director, personal interview, October 26, 2018)

Living year-round in the midst of such expansive public land presents similar challenges.

Not only are 60 or 70 percent of our homeowners second homeowners but about 66 percent of Grand County is public land, so U.S. Forest Service, BLM or the National Park Service. And so, even if all of the private landowners in our entire county did something it's only going to impact 34 percent of our land. And with the U.S. Forest Service and those guys who are the ones who are really going to have to take the action now it comes down to funds. And even if they have the funds a lot of the areas that they really need to do work are really steep and they aren't logistically able to get loggers out on the land there. And as we all know with government, everything takes so long to get through the bureaucracy of the government to get anything done. (Middle Park Conservation District Director, personal interview, October 26, 2018)

Living at the Point of a Spear. While in more amenity-oriented areas disturbance narratives and the cultural meaning of the image of the disturbed forest centered around shifting political ecological imaginaries, new vulnerabilities and the witness of regeneration, experiences in Walden and Jackson county were fundamentally different. Here, the death of the forest was framed as final: the symbol of the death of a community and way of life and an inevitable outcome in a decades-long experience of political and economic abandonment.

The timber and ranching history of Walden and Jackson County is a source of pride and identity for those who live there. Residents speak of themselves as outliers, a forgotten constituency in the broader region and particularly when compared to Summit County or the Denver metro area (also locally referred to as the Front Range). Unlike the other communities which are home to many “transplants” or amenity-migrants who relocated to the region in the past few decades, residents of Jackson County have often been in the area for generations and the community has remained isolated from the population boom other areas have seen. In speaking with employees of the Jackson County

Extension office in Walden:

Prentice: And that population boom across the Front Range, have you felt that here?

Extension Agent: No, no, no, no, no [all laughing] because there’s no industry up here.

Extension Program Coordinator: Up here we’ve had a population decrease.

Extension Agent: The population is 1,350. And it stays really even, it’s amazing. On DOLA [the Colorado Department of Local Affairs website] the balance from population loss because of death and gain because of birth – exactly equal. It’s a zero-sum game. You get new people that come in but then you have families that leave every year and so it stays very, very even. (personal interview, October 30, 2018)

Before the closure of a local sawmill and mining operation in 1985, the population of Jackson County was nearly 7,000 (Colorado Department of Local Affairs).

Similar to residents of the more agriculturally-based west end of Grand County, who repeatedly describe themselves as “tied” to the land, as a historically timber and ranching community economically reliant on use of public

lands, residents of Walden and Jackson County are deeply knowledgeable of, and attuned to, land management policies. As the mayor of the Walden described:

I moved out here [from Missouri] and these people are at the point of the spear, every federal government land use regulation affects them first. (personal interview, October 30, 2018)

People who have lived in Jackson County throughout their lives refer to the changes in policy that occurred over the latter part of the 20th century, recalling how small scale harvesting in local national forests was once a relatively informal process overseen by a Forest Service representative located in the community.

You could go to the Forest Service and buy a portion of the timber just between you and the head forester, and it really worked well. If you didn't hold up to your deal he wouldn't sell you anymore [...] it was really a good deal and people could harvest the timber and do a good job of it and then they all got this "well we don't cut any timber" idea and then from that it just went south quickly [...] when I was in high school and beyond, there was clear cutting. And nobody worried about that until somebody got all excited about it. And suddenly we just could *not* have clear cutting. After the beetles were over the land [in an earlier outbreak] it was clear cut in the 60's and it is some of the most beautiful forest we have today. So, like I said, forest management, they changed because it used to be done right in the local. (Jackson County Commissioner and Rancher, personal interview, November 3, 2018)

The practice of cutting, and clear cutting specifically, is framed not as an environmental sacrifice or a "necessary evil" but as inherent to forest health and succession. People from the community own that the immediate image of a cut forest is jarring but understand this image to be a temporary one and a precursor to young, green regeneration. A lifelong resident of Walden described how she mourns the fact that her children will never see the forests she grew up with:

They look at it and its either burnt or red. Or up around where we live, they've cut a lot. It had to be done and, in the future, hopefully it will look better, it's just going to take a while. It looks really sad, but I'd rather see it, personally, clear cut where it has the chance to regrow than this mass of trees that's just piled and well, nothing is going to be able to grow there. (Jackson County Extension Program Coordinator, personal interview, October 30, 2018)

Similar to the experience of those in Grand County who struggle with sensing a lack of power over their property and livelihood as they live in the midst of so many absentee land owners, residents of Jackson County perceive an absence of power or voice in the political process, particularly when it comes to public lands. They have the sense that their interests are not represented in Denver or Washington and point to a forest management paradigm that they feel burdens their livelihood opportunities and reflects the cultural values of those outside their community as an indication of that.

I would say the opinion is going to be the same from any rural community that they look at the Denver metro area as the big bull dog in the state and they're not thinking about what people who live off of the land have to deal with when the Denver metroplex is voting in restrictive policies that hurt how people make a living in rural America, let alone Colorado. It's enough of a problem that you know, there was that idea of secession where they were going to split Colorado in half, right? There was going to be Colorado and North Colorado. I mean that all came out of the way that the different communities are represented at the state government level and the fact that voices are not equal. (Jackson County Extension Agent, personal interview, October 30, 2018)

Changes to forest management over the latter part of the 20th century carried implications for both forest composition and the local timber industry:

I think there were policies that were put into place to definitely hold and reserve more forest land than probably should have been, I mean the only healthy forest is a managed forest. I think lessons are being learned about what's appropriate for land management

use and utilization but yes, I definitely think that there were lots of timber sales withheld in the 90's. Would it have stopped the mountain pine beetle outbreak? I don't know if that would have changed, but any timber cut you have you're going to have a diversity of age stand that's going to break up the forest so that the beetle can't just run across 100 percent of the landscape and take every tree because they're all even-aged and size class. (Jackson County Extension Agent, interview, October 30, 2018)

In Walden and Jackson County, the death of the forest symbolized not only that experience of political abandonment, but waste: wasted resources and wasted opportunities as the forests died what local people believed to be a preventable death. Compounding the frustration was the fact that federal forest management was slow to authorize mitigation projects once the outbreak began, and prohibited mitigation of public lands by local groups. A former Jackson County Commissioner and 3rd generation rancher who held his seat at the time of the outbreak traveled to Washington D.C. to meet with Forest Service leadership three times about opening up Forest Service land for local loggers to do small scale salvage harvesting.

I took a chainsaw to a meeting once with the Forest Service to show them what they had to do, and you know, just – how else?! And I could be very sarcastic, and they didn't get mad at me, but we always kidded – we don't need to hear the sound of music we need to hear the sound of chainsaws!

I said I'd like to make this proposition to the U.S. Forest Service. I said in Jackson County, Colorado, turn all your federal land over to Jackson County and we will manage the forest until it's a healthy forest and then we'll give it back to you. Yeah, well you can imagine how well that went over [...] but it was real frustrating to know how to do it. [...] Give us the land and we'll manage it to where we have a healthy forest and then we'll give it back to you and that involves cutting timber down. It's a renewable resource and it can be managed. And not just let it fall over and rot and burn and then limit

the amount of access that the wild – they live there too – and the elk and the deer herds need to be able to live there and move through it. (personal interview, November 3, 2018)

Waste and Wilderness. This sense of political exclusion and waste animated discussions of wilderness areas in the state and specifically near Jackson County as well. Colorado contains over 3.5 million acres of federally protected wilderness contained within 41 separate wilderness areas, five of which border Jackson County. The Wilderness Act of 1964 was passed to preserve and protect lands “in their natural condition” to “secure for present and future generations the benefits of wilderness” 11 U.S.C. 1131(a). The designation is the most prohibitive of all public land designations, prohibiting the use of any mechanized or motorized vehicle or equipment, commercial enterprise, the building of temporary or permanent roads, or the building of any structure or installation. All wilderness areas are designated by acts of Congress and the majority of designations in the state took place during the 1980’s and 1990’s.

At a hearing before the Subcommittee on Public Lands, National Parks, and Forests in 1989, Jackson County Commissioners testified against the proposed wilderness designation of several areas surrounding the county that had previously been national forest. The opening section of the statement from the Board of County Commissioners reads:

For many years the Board of County Commissioners of Jackson County have repeatedly gone on record as being opposed to designation of additional wilderness area in Jackson County, Colorado. Our numbers are few in Jackson County, and it is becoming increasingly more apparent to us that the economic well-being of the small county will be overshadowed by the political

expediency of satisfying the demands and the insatiable appetite of the preservationists who set aside more and more lands to be enjoyed by a select few.

Approximately 76,650 acres or nearly 23 percent of all the National Forest lands in Jackson County are already included in five designated wilderness areas. The proposed additions in your bill would result in over 30 percent of all the National Forest lands in our county being committed to restricted use. When is enough really going to be enough? (Colorado Wilderness Act, 1989)

The period of significant wilderness expansion coincided with the contraction of the local timber industry and rapid population loss in the county. Community members deploy the common critique of wilderness areas as inherently exclusionary, noting that in addition to the resource extraction that is excluded you cannot use the areas if you're "poor or sick or old" (Mayor of Walden, personal interview, October 30, 2018).

Furthermore, residents draw a direct causal link between a blowdown event in Mt. Zirkel wilderness area in October 1997 and the beginnings of the pine beetle disturbance. The blowdown event was the result of a massive low-pressure system across the Midwest that spun 120 mile-per-hour winds west over the continental divide, blowing down six million trees primarily in wilderness designated lands. The event immediately prompted conflicts over how to respond, with loggers hoping to salvage timber and pointing to entomologists' assertions that the excess of downed trees would create ideal conditions for the proliferation of beetle populations over the next several years, and environmentalist groups insisting that the prohibition of logging in the area stand so that the unique event and its ecological consequences could be studied (Larmer, 1997). Ultimately, logging of the downed timber was not permitted and

today residents point to the event as a key contributor to the scope and scale of the outbreak:

Local Logger: The bugs hit in '97 good and proper with the blowdown over there in the [Mt. Zirkel] wilderness area because it was just like a buffet for the bugs, and they metastasized at an exponential rate, because here was a buffet! And sure enough the infestation came like a domino effect.

Walden Mayor: So, we lost 95 percent of the ponderosa pine. That beetle is specific to the ponderosa pine, but they need a trigger like a drought and a blowdown. I've got the figures somewhere about how many trees went down in the blowdown – millions – and they didn't do anything. They knew it was going to happen, the Forest Service knew it was going to happen. The environmentalists apparently didn't know...

Editor, Jackson County Star: And what's worse as an environmentalist? Just wasting it and letting it go away? Or getting a beneficial use that everyone can enjoy and have a healthy forest? [...] a country that doesn't use its natural resources doesn't have any wealth. (personal interview, October 30, 2018)

The conflict in Jackson County over land use designations and their material effects to the community reflects the contentions within the discourse surrounding wilderness areas explored by Cronon (1996). Here, Cronon describes wilderness as a discursive construct that does little to provide material solutions to environmental problems and may in fact amplify many of the disparities in experiences of environmental privilege and exposure to environmental burdens. He discusses the origins of the wilderness discourse and the ultimate peril of ontologically separating the human and non-human world as such discourses do. Echoing many of the same themes Cronon identifies as he charts the lineage of wilderness as a social and cultural construct with deep

religious connections and significance, a Jackson County rancher recalled his confrontation with wilderness advocates on a collaborative forest advisory group:

I said well when I was a little boy my mother sent me to vacation bible school to see if she could, you know, better her little cowboy. And at vacation bible school I learned that when the good Lord went into the wilderness, the Devil met him. And when the children of Israel escaped into the wilderness there was no food, the good Lord had to provide manna for them. And I said, why in the *world* do you people want more land where the Devil lives and is a welfare state? (personal interview, November 3, 2018)

The closing of old logging roads and designation of official roadless areas within national forests provided another instance in which community members experienced this sense of being symbolically written out of nature. The level of anger in the community at the national push for roadless area designations and the increasingly tenuous power dynamic that emerged between the Forest Service as enforcers of new regulations and local people cannot be overstated. Community members' recollections of interactions with Forest Service representatives were suffused with a sense of deep resentment on the verge of violence. Gathered around a table at the River Rock Inn in Walden after a walk through national forest land and Colorado State Forest land, residents described this frustration:

Larry Ross [Routt National Forest District Ranger] had a presentation, talking about roadless areas in 1989 or 1990 in the court – in the actual courthouse. And he was standing at the podium and the first thing he did – the most condescending I've ever seen – he said, “now I'm a representative of the U.S. Forest Service. And I'm directed here by the Executive Branch. And the President of the United States is the runner of the Executive Branch. So in your eyes, I am the President.” And that's how he started the entire meeting. And he was talking about shutting off

roads to Aquafre and to different places like that. But that's how he started the whole thing. And good thing he was in the courthouse because if he'd been somewhere else, he might not have made it home that night. (Editor, Jackson County Star, personal interview, October 30, 2018)

One of my hired mans was gonna kill 'em, I mean literally kill 'em. Had a big machine with a dead tree he was gonna push it over make it look like an accident. And he's already done 14 years in the pen for killing somebody anyway. He was gonna kill that Forest Service representative. (Local Logger, personal interview, October 30, 2018)

And there's nothing more that pisses me off than when I hike up to a lake and I'll tell you, Long Lake up there (inside a roadless area). Hike up to the lake it's about a three-mile hike, you get up there and there's a Forest Service vehicle and the guy's fishing at the lake because he can open the gates [...] If I'd had a gun I would have shot him. (Editor, Jackson County Star, personal interview, October 30, 2018)

The disturbance narratives of those in Walden and Jackson county recall a long history of systematic exclusion in the changing political context of the state. For them, the scope and scale of the outbreak evidenced the ecological folly of preservationism, and the flurry of land management decisions made in the latter part of the 20th century. While more amenity-oriented communities were challenged to dismantle the orthodoxy and fetishization of static, green forests, in Walden people watched the death of the forest with the sense that it was inevitable, and that they, like the forest, were now laid to waste. While the experience of loss was largely tied to evolving public preferences for land use and the associated loss of economic security, the change to the image of the forests evoked a sense of lost identity and home. On a drive around North Park one lifelong resident pointed out the crumbling remains of log homes dating back

to the early days of settlement, recalling by name the friends and family who had left over the past decades. In response to the question of what the future looks like, he replied, “well that’s the question isn’t it, sometimes you just want to drive around and cry.” (personal interview, November 1, 2018)

Timber, Ecosystem Services, and Narratives of Industry Decline

Introduction

As consensus about the ecological conditions that produced the scale of the MPB disturbance has been generally established, across communities, people have pointed to the lack of a viable timber industry in the state as a constraint to more active and responsive forest management. Increasing forest fragmentation and development, and a century of fire suppression policies resulted in dense, even-aged forests that having proved vulnerable to insect disturbance are now believed to be increasingly vulnerable to fire. Widespread recognition of what people believed to be a mounting risk of catastrophic wildfire encouraged individual landowners and homeowners' associations to mitigate private lands, and elicited calls for similar mitigation work on public lands. Such work was slow to occur though, as industry capacity was informed by both current and historic regulatory policies, and regional and international market pressures.

While the industry's lack of capacity to respond was recognized across constituencies, actor groups offered different narrative explanations for why this was so. Those in the historically extraction-dependent communities of Walden and Jackson County and timber industry groups emphasized the influence of regional cultural change, and its political implications for public land management. Those in Summit County, the more amenity-oriented parts of Grand County, and environmentalist groups emphasized global market pressures and staunchly resisted the narrative that drew any causal link between industry

decline and the MPB disturbance. The competing narrative explanations for industry decline correspond to competing narratives of the origins and risks associated with the disturbance, reflecting distinct environmental subjectivities.

Forest Industry in Colorado

Due to steep terrain and the slow rate at which vegetation grows in thin mountain air, Colorado has never been a major timber exporter. Additionally, the majority of forested land in the state is under federal ownership and so subject to policies that have favored forest preservation over the course of the past decades. U.S. Forest Service timber sales in Colorado declined from 26,125 acres in 1990 to 7,389 acres in 2008 (CSFS, 2010). Materials for sawmills sourced from the national forests have declined from 83.1 million board feet in 1982 to 54.8 million board feet in 2012 (Sorenson et al., 2016). Today the Forest Service's "Timber Harvest and Forest Products Industry" reports that are typically produced for individual states include Colorado in the "Four Corners" region (referring to the way that the four corners of the borders of Colorado, Utah, Arizona and New Mexico converge) because timber harvests are so low in the state and region it is necessary to group them together (Vaughan and Mackes, 2014). The policy shift away from managing for timber production on Forest Service lands began in the middle of the 20th century in response to a nascent local culture of recreation and tourism, a possible byproduct of which was the litigious forest management context of the 1980's and 1990's, where timber sales on public lands were routinely litigated. Widespread commercial logging was prevalent only in the early days of settlement in the state in the late 1800's, which

contributed to the even-aged forest stands that proved so susceptible to the MPB disturbance.

In the last several decades, management of U.S. national forests in Colorado has become even less focused on timber production and more focused on managing for recreation and to maintain the “ecosystem services” (a term used to describe the contribution of the nonhuman environment to human health and wellbeing, often expressed in terms of monetary value) that the forests provide, particularly watershed protection.

Recently, regional and global events have meant new challenges and demands on the remaining industry. Among these pressures facing the industry are new federal actions to promote community wildfire prevention, which generally includes contracting for targeted thinning in the Wildland-Urban Interface, the 2008 global financial crisis, in which the increasing demand for lumber that was fueled by housing speculation was abruptly ended leading to the loss of 71,000 forestry jobs in the western United States (Keegan et al., 2011), and the introduction of stewardship contracting on public lands.

These pressures coincide with a transformed ecological context, as Colorado forests move “beyond beetle,” a rhetorical framing deployed by land managers in the area to focus management discussions on the next forest. At this time there is an increased social license for small scale logging as a means of maintaining ecosystem services (Quinton, 2018). These small-scale thinning and harvesting operations, called service contracts, seek to mitigate fire hazards and remove dead and fallen trees. The vast majority of the biomass extracted in

such work is then chipped, or in some cases, used for firewood (Vaughan and Mackes, 2014).

Like much of the western United States, Colorado has seen its milling capacity decrease over the past several decades. In 2012 the state had only 31 mills compared to 84 in 1982 (Sorensen et al., 2012). Having fewer mills increases trucking distances, which, combined with the low rates of utilization to offset costs, makes it increasingly difficult to treat acres without grants or subsidies. A 2014 survey revealed that in the context of new ecological, economic, and political pressures, the dwindling workforce of forestry contractors in Colorado struggles with a lack of identity, and a lack of material capacity to meet mounting management needs (Vaughan and Mackes, 2014).

The abundant need for service work across the region, and the low rates at which the wood that is extracted is utilized, reflects an internal contradiction generated by the transfer of primary commodity production out of Colorado, and the rural United States more generally, and the implications of the shift towards ecosystem management for ecosystem services. At the turn of the 21st century (with the trend remaining in place today), it was estimated that Colorado imported between 95 and 100 percent of its wood products (Lynch and Mackes, 2003). A similar discrepancy of concern for mountain communities is manifested in the Forest Service's practice of routinely "fire borrowing," where the agency spends billions of its budget fighting wildfires and consequently lacks the funds to proactively engage in fuel reduction, arguably leading to hotter, more severe, and destructive fires.

Industry and Timber-Dependent Community Narratives

Lynx Versus Lodgepole. The Colorado Timber Industry Association (CTIA) describes themselves as a 501(c)(6) trade association that advocates for Colorado's forest products, companies, and for scientific, sustainable forest management (CTIA, 2016). It is composed of nearly 50 forest product and logging companies from throughout the state.

In the Spring 2006 edition of the association newsletter, the president describes how he is often confronted with the question, "where is the timber industry and why aren't they cleaning up this big bug mess?" (CTIA, 2006, p. 2). In response, he writes:

The same people who spent 25 years trying to put me out of business have been spending the last 5 years trying to work me to death! When we the people chose not to properly manage the forest, Mother Nature takes over and many of those who pressured the Forest Service not to allow any tree cutting seem to be changing their tune. (CTIA 2006, p. 2)

Similar to the Colorado State Forest Service, CTIA publications routinely refer to the visual contrast between dead and dying forest stands and those patches that were clear-cut in preceding decades and remained green throughout the disturbance. Industry literature argues that the next step in maintaining these enduring patches and preventing another landscape level disturbance is a practice called pre-commercial thinning. Such thinning is an integral part of timber production and involves the cutting of select smaller trees to alleviate stand density and allow for unencumbered growth of larger, more

valuable ones. In the early 2000's, the Forest Service made the decision to limit precommercial thinning of lodgepole pine stands in response to the North American Lynx being classified as *threatened* by the Fish and Wildlife Service. The classification limited the amount of activity permitted in any forest deemed critical habitat and further curtailed industry activity on public lands in the region.

According to the Forest Service's own projections, eliminating precommercial thinning would result in an 89 percent reduction of production of sawlog-sized material over the next 60 years," which will make it very, very unlikely that the Colorado High Country national forest lands will ever again support a timber sale program or a forest products industry. (CTIA, 2006)

The dense lodgepole pine stands on Forest Service land in northern Colorado provide habitat for snowshoe hares, the primary prey species for lynx, and so pursuant to the Endangered Species Act, require special protection to maintain population levels for both snowshoe hares and lynx. While owning that the forests provide habitat for snowshoe hares, industry actors dispute the presence of lynx in the forests in question. Newsletters frequently refer to the infrequency with which the reclusive species is sighted, with one newsletter containing a cartoon of a Forest Service ranger standing in front of a dense forest holding a piece of paper with the words "Lynx plan: Do Nothin.'" The caption below reads: No thinning on millions of acres for a critter that's not there? You call that forest management?" (CTIA, 2009)

Such species classifications reveal the governing function of environmental expertise as a power/knowledge regime, as the value for biodiversity and preventing species degradation supersedes industry claims to

the forests as material resources and would-be commodities. The conflict over lodgepole forest management is paradigmatic of the conflicts between environmental power/knowledges and their species entanglements that have emerged throughout the West as part of a shifting human understanding of and relationship to forests, the most notorious example of this being the so-called “Spotted-Owl Wars” in the Pacific Northwest. In this governing context, legitimate authority over forests on public lands has increasingly been invested in ecologists who construct forests as complex assemblages of quantified and categorized species and relationships knowable only via the supposed objectivity of science, and inherently opposed to the material interests of industry actors.

In response to the exclusion of harvesting activity from lodgepole forests, the industry argues that the Forest Service has “abdicated their forest management responsibilities to wildlife biologists and the U.S. Fish and Wildlife Service” (CTIA, 2006, p. 4). The industry in Colorado enrolls pine beetle activity in their narrative, framing the pine beetle as the more serious threat to forests and arguing that the best way to avoid future insect outbreaks is to renew thinning of regenerated lodgepole pine stands and reverse the prioritization of forest wildlife biodiversity over timber management (CTIA, 2006).

The restrictions on precommercial thinning will restrict future management options, limit achievement of numerous forest plan goals and objectives, and contribute to increased long-term risks of insects, disease and fire. (CTIA, 2009)

Industry actors vie for legitimacy with politically ascendant preservationist voices as they position themselves as the “real environmentalists” in Colorado forests. Association newsletters emphasize the role to be played by industry in maintaining the forest as “Mother Nature’s healthy alpine garden” (CTIA, 2009 p. 2). Industry narratives foreground regeneration processes and the importance of wildfire mitigation in their discursive constructions of forest health, making human interaction central to forest resilience and natural succession. Accordingly, the bark beetle epidemic is framed as symptomatic of an unhealthy, unmanaged forest. Around the peak of the outbreak, an industry newsletter contains a cartoon depiction of a forester, equipped with a chainsaw, pressing a stethoscope to the trunk of a tree inscribed with the words *National Forest*. The caption reads: “You’re in terrible health!! You have heart rot, root rot, bugs and more! Who’s taking care of you?!” (CTIA, 2006, p. 6) The CTIA president writes in his newsletter message, “we must realize that we are a tool to be used to prevent the over aged, overstocked, and generally unhealthy conditions which have promoted such outbreaks as the present bark beetle epidemic” (CTIA, 2007, p. 2). Industry literature draws a clear causal link between the diminished presence of the timber industry in the state, the accumulation of even-aged trees in forest stands, and the scope and scale of the MPB outbreak, arguing that the timber industry is the true caretaker of Colorado forests and that the decline in harvesting from national forest lands has made the landscape vulnerable to further disturbance. Similar to all actors, industry narratives pivot around a particular governing discourse of forest health and vulnerability, theirs being one

that implies the dependence of forests on ongoing transformation via human agency.

The Perfect Storm. For many throughout the region and across political contingencies, the outbreak elicited new thinking about forest health and relationships, highlighting the degree to which a century of wildfire suppression had altered the physical composition of the forest and created conditions for landscape level disturbance. However, the housing market collapse and global economic recession beginning in 2008 coincided with the peak of the MPB disturbance and an increase in public support for an industry role to be played in forest management. The plummet of North American lumber markets began in the summer of 2006. At the time, the CTIA president contextualized the market downturn within the Forest Service's and the public's call for an increased role by industry in forest management saying:

The fall in lumber prices has coincided with increased public support for increasing timber harvest levels to respond to overall forest health concerns, especially the mountain pine beetle and spruce bark beetle epidemics in Colorado's national forests. But the current lumber markets make it harder for sawmills to respond as aggressively as they, or the public, would like. (CTIA, 2006, p. 6)

In 2008, the focus of industry newsletters is on the lumber market collapse as a symptom of wider economic recession. The CTIA director describes how the lumber markets, like all commodity markets, are cyclical and ideally individual businesses have the capacity to thrive in good markets and survive in lousy ones.

But this time, it's really lousy. Demand for housing dropped, which led to a reduction in lumber demand nationally from 60.5 billion board feet in 2006 to 51.2 billion board feet in 2007. Economists expect lumber demand to drop further, to 49.0 billion board feet, in 2008. Consequently, lumber prices hit new lows. Falling lumber prices combined with rising fuel costs and rising labor costs have been the economic equivalent of "The Perfect Storm" on forest products companies, nationally and in Colorado. Across the country, many sawmills have curtailed production or simply closed their doors for good. (CTIA, 2008, p. 1)

According to the Intermountain Forest Association, a group that represents forest industry interests at the regional level, over 20 mills that handled Colorado timber closed since the early 1980s. The mill closures are viewed by the organization as the result of federal land management policy moves away from timber harvesting in the mid-1990's. In 2010, as "social license" for harvesting of dead and vulnerable timber expanded, and the Forest Service announced \$40 million to support efforts to combat the effects of the MPB disturbance, there were only three mills remaining in the state (Harmon, 2010). Despite increasing capacity, these remaining mills struggled to respond as slow markets meant processed wood sat unsold and depreciating for years. At the time, buyers for Colorado lumber were scarce because of the global economic recession and its specific consequences to the construction industry, but also because of the regulatory context in which a glut of Canadian timber was able to flood American markets. Voices from the state and regional timber industry and Colorado State University (CSU) Extension lamented the compounding effects of historic and current regulatory and economic factors in constraining industry response. In a Denver Post article shared among CTIA members, a CSU Extension forestry specialist described the situation saying,

“We don’t have the markets, and we don’t have the processors at this point.

Everything has conspired to make it a problem. Fifteen years ago, we could have moved the wood.” In the same article the spokesman for the Intermountain

Forest Association says:

When we need to be doing more work in the forest, we’re saddled with the worst lumber markets since the Great Depression [...] Canada has 10 times the number of dead trees and a thriving industry, they can move lumber into the United States real quickly. They’re dumping wood on us.” (Harmon, 2010)

The Death Nell. In the historically timber-dependent community of Walden, residents readily attribute the loss of industry to politics and the influence of preservationist interests, but in adherence to the conservative political identity that characterizes rural Colorado, conspicuously refrain from blaming market forces. In a conversation about the history of the industry in Colorado and the nationwide contraction of the industry that occurred in the latter part of the 20th century, while looking over newspaper archives from the period in which the last sawmill in Jackson County was being shuttered, the mayor of Walden said:

In the 1990’s before the beetle-kill, when the Forest Service was selling the trees [...] the price per tree in the United States that the Forest Service was charging was 100 times the price that the Canadian provinces were charging – 100 times! And the Canadian lumber just drove American lumber back. I mean half of the sawmills in the American West closed over a 20-year period, and the federal government did nothing about that. Nothing. (personal interview, October 30, 2018).

While the causes for the decline in the timber industry in Colorado remain complex and contested, the effects were felt most acutely in Walden. Residents

reflect on the loss of the industry as part of their community's experience of broader regional economic change. A teacher and lifelong resident of Walden described the change saying:

Well losing the timber business affected everything here in this town. I'm a schoolteacher, and I watched our school go from the average class size of 25 to 10 [...] because the mines had already started closing down and that was just like the death nelly when the timber business died. [...] It was the last thing to go, they had already closed the coal mine and the forest park mine was closed in the seventies and the coal mines kind of the eighties and then in the beginning of the nineties the timber industry went (Walden teacher, personal interview, October 30, 2018)

For Walden residents, the sweeping scale of the pine beetle disturbance was understood as evidence of the management folly of forest preservation. It validated their belief that industry interests were compatible with forest health, and that the decline of the industry was the consequence of regional political and cultural changes and their implications for public lands. The mayor of Walden described the death of the forest as the "frosting on the cake after everything else" (personal interview, October 30, 2018). As an historic timber and ranching community typifying the economic model of the "Old West," residents feel the compounding effects of the shift in thinking about forests and the globalization of timber markets – the value for aesthetics and biodiversity over primary commodity production.

At the time of the outbreak, most of the affected forests were on Forest Service and Wilderness designated lands. A coalition of local governments from northwestern Colorado called the Northwest Colorado Council of Governments (NWCCOG) petitioned the Forest Service to permit timber sales and mitigation

work swiftly, while value remained in the harvested timber. At this time, Jackson County residents felt the Forest Service “sat on their hands,” refraining from expanding access to timber or adopting policies that may have mitigated the extent of mortality. By the time the outbreak had killed most of the mature trees in the region and the Forest Service was under pressure from the public in mountain communities to conduct wildfire mitigation, most of the dead trees were no longer marketable.

When trees die in arid environments, they lose the vast majority of their moisture content within two years. Trees that are too dry cannot be processed by sawmills and made into lumber. For this reason, the Western Wood Products Association (WWPA), a group that represents softwood lumber manufacturers in the western United States and Alaska, doesn’t allow any dead timber (whether beetle-killed or not) to be used in the production of dimensional lumber for building homes and other structures. Timber contractors need to be able to prove when the tree died because it can only be processed within the first year; beetle-kill pine, with its characteristic blue fungus staining, will only grade for decorative, nonstructural use by WWPA standards. While the ornamental uses for beetle-kill pine have grown in popularity, many in the timber industry dispute the validity of this grading and the diminished marketability it implies. A former Jackson County Commissioner and timber industry advocate who worked with NWCCOG described the way that the cultural value of the blue staining changed over time in the minds of individual consumers, and went from being considered a detracting characteristic to a fetishized one, “the word *fungus* oh you know that

just scared people to death – *fungus, fungus* – and then they decided it was the most beautiful decorative wood they could ever have” (Jackson County Commissioner, personal interview, November 2, 2018). While a market for this decorative wood exists, and beetle-kill furniture, paneling, and wood floors have now become ubiquitous features of homes and businesses in the region, there is still considerably less demand for beetle-kill wood than there is for the structural lumber that is imported.

Amenity Based Narratives of Industry Decline

It’s Because People Wanted Their Trees. In Summit County and the more amenity-oriented parts of Grand County, people were reticent to connect the pine beetle outbreak to a diminished industry presence in the state. In fact, many bristled at the notion that there was a causal relationship between the two. Residents of these communities were more likely to see anthropogenic climate change as a cause of the outbreak and its (believed to be) unprecedented scale. They emphasized the low commercial value of pine, and the inability of Colorado timber companies to be competitive in a global market. For many, the timber industry in Colorado was so functionally inadequate as to be framed as an historic artifact. Residents pointed to the fact that during the disturbance when mitigation work was being done on private lands, rather than having timber contractors eager to access material, landowners often had to do the work themselves, then pay to have the wood removed from their property and brought to a landfill or chipped. Scoffing at the idea that the timber industry was a

casualty of cultural changes in the region the owner of Shadowcliff Mountain

Lodge recalled:

I mean we didn't have the timber industry coming and saying we'd gladly take your trees and transport them somewhere – why? Because they're lodgepole pines, and pine trees don't have the same value, especially if they're not huge [...] so you know it's an economic issue and we understand it's an economic issue. You know most of these trees just rotted – they got taken somewhere either at a landfill or near a landfill. (Owner, Shadowcliff Mountain Lodge, personal interview, October 23, 2018)

Conversations about forest management in Summit County and the region more broadly frequently mention Summit County's Forest Health Task Force (FHTF) as a collaborative group formed in response to the MPB disturbance. The founder of the group described how when the group was formed in the early 2000's, initial meetings were attended by more than 100 local residents, representatives from the U.S. and Colorado State Forest Service, local municipalities, environmentalist and industry groups. Around the peak of the outbreak, as the landscape was being transformed, communities in Summit County were struggling to comprehend the effects the disturbance would have for the forests and local economy. These early meetings were described as contentious, nearly coming to blows as attendees sparred over actions to be taken. The founder of the group described how there was a period of renewed enthusiasm for the forest industry and the role the industry could play in facilitating forest regeneration and wildfire mitigation through the removal of dead, but still marketable trees.

As a group we had a couple of areas that we cut for the Forest Service, and we tried to market the timber in various ways and find people to make things and so on and people were excited. People

were receptive in the sense that, you know, this was a way for the forest industry to say hey we can really play a very beneficial part in solving this problem. Unfortunately for our forest, with the size of our trees and the distance we are from mills or potential power plants – anything, you name it – it makes it really tough, economically you know, so its died out, not because people have said “oh we don’t want to have this in our neck of the woods,” it’s just hard to make money. And here it’s expensive real estate too. (FHTF founder, personal interview, October 26, 2018).

The simple unfeasibility of developing an industry presence in Summit with existing mill infrastructure in the state was echoed by CSU Extension representatives in the county.

Our closest mill is in Montrose so more than three hours away [...] and the blades they use require a certain dimension of wood, and most of our trees don’t really get up to that. All of these lodgepole are skinny trees to start with, they’re pretty small so we don’t really have much in the way of nearby forest industry. And if we’re talking about pine which is a culturally perceived low value softwood it’s a low value commodity to begin with, and if the mills can’t process them, then suddenly the commodity isn’t paying the gas for the vehicle or the labor for the driver. (Summit County Extension Agent, personal interview, October 25, 2018).

Aside from traditional utilization options, there were discussions of using dead wood as biomass for power generation. This evoked a backlash from communities that were resistant to the idea of having biomass facilities situated close to their homes and hauling material to existing power plants was subject to the same logistical constraints to profitability.

In addition to a pervasive skepticism about the relevance or material viability of the timber industry, people in Summit and the more amenity-oriented parts of Grand County flatly rejected the notion that the industry had been “forced out” by land management policy changes.

A big thing [people were discussing in response to the outbreak] was okay, we've got to salvage logs and everything. And of course that was ridiculous because there's no timber industry. There's no road infrastructure in many of these areas, there's no industry, there's nobody to cut the trees down anyway and the trees are pretty worthless after a few years because the sap will rot. You know the timber industry is just one of those boom and bust kind of industries anyways, and it's kind of like the coal industry now, it's market forces. They complain about that it's regulations, it's not. It's market forces. (CSU Forest and Fire Ecologist, personal interview, October 23, 2018)

We live in a culture in the last 30 years that has become a culture that says that government is always at fault when something goes wrong. So it starts there. And when something goes wrong, we start looking for somebody to fault other than ourselves.[...] if the timber industry got forced, out it's because people wanted their trees, and they wanted the beauty of being able to look out across Shadow Mountain, or you know any other mountains and see these gorgeous trees. We wanted to see the green on the hillside, and the timber industry going in has an adverse effect on that. (Owner, Shadowcliff Mountain Lodge, October 23, 2018)

Economic Change and Governing Discourses of the Environment

Timberlands versus Ecosystems. It is challenging to disentangle industry capacity from politics in a region characterized by its extent of public lands. Since private lands are not expansive enough to support the forest industry alone, it has historically relied on access to national forests, and work in collaboration with the Forest Service. The wildfires in the first decade of the 21st century and the MPB disturbance highlighted the need for a forest industry in the state to carry out management work that would mimic natural disturbance and created an increased public demand for industry options in management and wood utilization. In their role advising private landowners, the CSFS described

the logging community's perception of how industry capacity has been shaped by federal regulations.

The environmentalist movement in the 80's started to limit the ability of the U.S. Forest Service to proactively manage [...] basically it was the lack of management which probably led to a demise in the industry in areas which then further limited the amount of work that got done [...] We do what we can do to support the timber industry and their complaint is that the federal government isn't doing enough to sustain the industry which we all know we need the industry to sustain our forest management. (CSFS Forester, personal interview, October 24, 2018)

The scale of the MPB disturbance and the degree to which it was understood as a precursor to more severe wildfires in the region generally led constituencies towards an appreciation for the role that the forest industry could play in mediating between increasing development and the disturbance-prone landscape. Yet, following the shift in the Forest Service's policy paradigm away from sustained yield towards multiple use with a focus on ecosystem services in the latter part of the 20th century, it has been challenging to reestablish an industry presence within the new paradigm. Even as public sentiment in mountain communities across the extraction to amenity spectrum has coalesced around the need for thinning and wildfire mitigation, and previously unlikely partnerships have emerged between industry and environmental advocacy groups, such work has been slow to occur on public lands. As Forest Service budgets and staffing levels have declined, it's common that the environmental assessments that must occur before a project can begin are delayed as the positions that conduct such work go unfilled or existing staff are spread thin across multiple and competing duties (Quinton, 2018). The resulting inaction is a

source of frustration for communities that are vulnerable to fire and experience their vulnerability as a consequence of extra-local decision-making power.

Rural Spaces for Urban Places. Management plans that foreground ecosystem services do so with a decidedly urban bias, as the landscape in question and the ecological processes and relationships it contains is constructed as a cost-effective way to meet the resource needs of largely urban populations. In 1997, when New York City was faced with the prospect of having to spend nearly \$10 billion on building and maintaining a new drinking water filtration plant, much to the delight of economists, the city opted instead to purchase thousands of acres within the city's watershed and develop watershed protection plans with upstate communities for a minute fraction of the cost (Appleton, 2002). The Commissioner of the New York City Department of Environmental Protection described how the project illustrated the way that the ecosystem service approach changes the environment from a "cost center to a profit center" (Appleton, 2002). Similarly, mountain watersheds in Colorado have been protected, manipulated and effectively rearranged to meet the needs of the urbanized Front Range over the course of the state's settled history.

That mountain landscapes are subject to the management influence and cultural preferences of distant forces is a truism in a place like Walden, yet communities across the economic spectrum experience this extra-local governance of the local environment. Summit County does not have the same economic history as Walden, or the more logging-dependent parts of Grand County. With the exception of smaller mining operations that were active in the

first half of the 20th century it has always been more of a resort destination, the regional influence of which has been amplified by the massive population growth of both the county itself and the Denver metro area. Summit County is less than 70 miles west of Denver on Interstate 70. Because of this, the economic, infrastructure, and environmental management needs of “the I-70 corridor” are a focal point for policy makers. A CSFS forester spoke about the priorities of state and federal level politicians who frequently tour forests throughout the region:

The I-70 Corridor. That is heard the most because it’s the easiest to get to from Denver, it’s where most of the people in the state go on their vacations or have their second homes and whatever so those are the places that get heard the most.” (personal interview, October 24, 2018)

Denver is growing rapidly, with the population of the broader metro area increasing by nearly 400,000 and the city itself increasing by nearly 120,000 over the past decade (Roberts, 2019). Many relocate to the area for its proximity to natural amenities and resort destinations like Summit County, and paralleling the trends in amenity migration more broadly, the influx of the “young, white, and rich” exacerbates local economic inequalities (Roberts, 2018). While it can be assumed that many of the increasing number of Denver residents recreate in Summit County, it is not the case that *most* do. In fact, 80 percent of Denver Public School students, the majority of whom are Latinx and free and reduced lunch eligible, have never even been to the mountains (DPS, 2020; Cheek, 2015).

The relationship between Summit County and the Denver metro area extends beyond Summit County existing as a playground for Denverites with the

means to access it. Denver is materially dependent on Summit County as it is also home to Dillon reservoir, the largest water impoundment for Denver Water. “Every drop of that water belongs to the citizens and the city of Denver. Not one drop of that water gets spent up here” (Summit County Extension Agent, personal interview, October 25, 2018). In this way Dillon reservoir functions as a node of Denver’s governing power over forests in Summit County and the region more broadly as the quality of water is dependent on the status of surrounding, sieve-like forests.

The population growth in the Denver metro area has coincided with the paradigmatic shift in forest management towards ecosystem services and specifically watershed management. This power/knowledge shift away from traditional forestry and the state’s production of primary commodities constitutes a reterritorialization of the landscape in the practice that state powers have always employed to enroll forests in the production of knowledge that supports control and supervision (Knobloch, 1996). Over the time period in which timbering was delegitimized, and the policy of “sustained yield” that constructed forests as yields and trees as agricultural objects (Knobloch, 1996) was replaced by an ecosystem and watershed management paradigm, peripheral forests became valuable to the degree that they contributed to the material and cultural sustenance of growing urban centers.

The Denver metro area and Front Range are located in ecological zones termed “high deserts” for their lack of annual moisture. The population in the area is dependent on water from snowpack on the Western Slope of the continental

divide carried through the mountains (against its natural flow) by transcontinental pipeline infrastructure. Every year, the Colorado-Big Thompson Project, the largest of these transcontinental pipelines, transports more than 200,000 acre-feet of water from the upper Colorado River basin to the East Slope via the 13.1-mile Alva B. Adams Tunnel beneath the Continental Divide (Bureau of Reclamation, 2020). The water is collected and distributed via 12 reservoirs, 35 miles of tunnels, and 95 miles of canals. The Colorado-Big Thompson project is described by the Bureau of Reclamation as “one of the largest and most complex natural resource developments undertaken.”

The reengineering of mountain watersheds began in the early part of the 20th century to support agriculture along the Front Range. As the population in the region grew, water was increasingly diverted from agricultural use towards households, industry and hydro-power generation to support the development and expansion of urban centers (Bureau of Reclamation). This material re-ordering of nature is contextualized by an economic and cultural transition at the end of the 20th century that foregrounds landscape aesthetics, the lifestyle benefits associated with access to pristine wilderness, and the ascension of a normative environmental subjectivity that relies on technologies of the self that offer individual (largely consumptive) solutions to global environmental problems (Rutherford, 2007). In Summit County at the end of our interview the CSU Extension Agent sighed as he reflected on this irony, questioning if “we’ve already fucked it all up too much already,” and remarking how anywhere in Summit County, or the culturally-adjacent Front Range, it’s likely that a person

would be verbally reprimanded on the street for tossing a recyclable can into the trash, yet the very existence of these communities has been achieved through the state's claim to and reengineering of the environment.

In Walden, on the other hand, among people who have spent their lives in an area characterized by its remoteness and its dependence on natural resources, there is a pervasive skepticism about discourses of environmental protection, and who ought to be deemed a "real environmentalist." As one rancher described, "as agriculture, we're one of the best environmentalists that the world has had. We use the land we don't abuse it." (personal interview, November 2, 2018).

The exploration of these competing narratives is less about discerning which is more or less valid; rather, its value is in better understanding the way that narrative constructions of the disturbance parallel narratives of industry decline, revealing the symbolic meaning of the landscape for different constituencies, and the way that economic transformation is mirrored in cultural constructions of the lived environment. Embedded in the Walden narrative of abandonment and political economic exclusion is a loss of livelihood that was mirrored in the loss of the forest as a landscape of production. As a landscape of lifestyle and consumption, the narratives of Summit reflect and legitimize the power arrangements that exist more broadly in the state. The perceived obsolescence of a forest industry reflects the degree to which the landscape and the relationships it contains have been constructed as an ecosystem to be

managed via the technologies of experts to sustain the cultural and material needs of the state's power center.

Beetles, Fire, and Property

Introduction

Disturbance and Landscape

Prior to settlement, the disturbance that lodgepole forests require for ecological succession often took place in the form of large, stand-replacing fires of natural or anthropogenic origin which opened up the canopy and serotinous cones to create conditions for stand regeneration. As a result of the abundance of seeds released from serotinous cones, in the first two to three decades following stand-replacing fires, lodgepole pine typically regenerate vigorously and densely in what are colloquially referred to as “dog-hair stands.” As competition for nutrients and water increase, stands tend to go through a thinning stage 70–100 years following establishment, after which research suggests species dominance begins to shift toward more shade tolerant Engelmann spruce and subalpine fir (Sibold et al., 2007; Peet 2000). However, succession to spruce and fir is highly contingent on moisture availability and in the absence of needed moisture lodgepole stands will simply replace themselves or be replaced by aspen, the pioneer species in subalpine zones (Sibold et al., 2007).

Land management regimes and property ownership in the forested West has always struggled to contend with the inherent dynamism of the landscape and the consequent risks to resources, property and lives it creates. While forests produce “secondary disturbances” in the form of insect outbreaks, blowdown events and smaller surface fires, the preeminent concern for land

managers and residents is high-severity crown fires, which move quickly and often unpredictably in dry, windy climates.

In less sedentary societies, fire's resistance to control was less of a problem. In *The Culture of Wilderness*, Frieda Knobloch writes that the relatively free play of fire over the landscape complemented the transhumance of indigenous societies as "both people and fire moved across space" (1996, p. 28). In the post-settlement landscape, approaches to fire and fire management have always been political; informed by competing material interests and knowledge systems. Knobloch writes about how in the early days of European settlement, fire was enrolled in the work of nation-building as a key force of "deterritorialization," or stripping the landscape of its previous meanings and cultural entanglements; used to clear land for building and cultivation, and drive out indigenous populations. Once the West was deterritorialized in the course of westward expansion, the large fires occurring at the beginning of the 20th then provided an occasion for asserting new state power over forests as state resources. Knobloch writes that,

The Big Burn of 1910 brought all of the components of twentieth-century forestry together in a telling trial by fire of the emerging national bureaucratic regime of forest management. Private and public interests, all levels of government, foresters, labor and the military joined in the first organized effort to coordinate and integrate authoritarian power to combat the common "enemy," fire. (1996, 31)

The losses of property and resources associated with the Big Burn and other large fires occurring around this time provided justification for the implementation

of a strict policy of “fast, energetic, and thorough suppression of all fires in all locations” (Gorte and Gorte, 1979). The fire suppression policy was codified in 1935 with “the 10am rule,” which stated that any wildfire detected on Forest Service land must be contained or eliminated “without reservation,” if not immediately then by 10am the following day (Donovan and Brown, 2007).

In subsequent decades debates quietly emerged among foresters, landowners and conservationists whether forests could sustain this degree of fire exclusion and whether they were in fact being primed for larger, more severe fires. While some landowners and others familiar with the historic presence and indigenous use of fire for land management argued for the beneficial role of fire in forests, most professional foresters remained staunchly opposed. The majority of these foresters were trained in forestry schools in the eastern U.S. that were heavily influenced by German forestry practices with their emphasis on an ordered, controlled and scientific approach to forest management, and pejoratively referred to intentional burning as “Indian forestry” (Donovan and Brown, 2007). The dominant view among professional foresters was that any fire, even those less severe ones that never reach crown height, would destroy smaller trees thus preventing them from reaching maturity when they were of greatest value as timber products. The perspective was articulated vociferously by F.E. Olmsted in a Sierra Club Bulletin in 1911.

It is said that we should follow the savage’s example of ‘burning up the woods’ to a small extent in order that they may not be burnt up to a greater extent by and by. This is not forestry; not conservation; it is simple destruction...the Government, first of all,

must keep its lands producing timber crops indefinitely, and it is wholly impossible to do this without protecting, encouraging, and bringing to maturity every bit of natural young growth. (in Carle 2002, p. 20).

Fire suppression as a Forest Service policy continued throughout the 21st century, complemented by the emergence of fire prevention as matter of personal responsibility and civic service in the context of WWII. The Smokey Bear campaign, begun in 1944, is the longest running public service advertising campaign in the US, educating the public about campfire safety and the importance of wildfire defensible space around structures (Smokey Bear). While fire suppression efforts were successful in the short-term, the exclusion of fire from the landscape has created new conditions of precarity that are complicated by the economic context of the region.

Over the latter part of the 20th century, both the expense of fighting fire, and the area of forest affected by wildfire annually have steadily increased (Donovan and Brown, 2007). Today fuel loads exceed historical range in many forests, important ecological changes including drought and abundant tree mortality from bark beetles have occurred, and populations in forests and particularly in the high-value Wildland-Urban Interface have expanded, with homeowners expecting aggressive fire suppression to protect property regardless of cost (Arno and Allison-Bunnell, 2002).

Thinking with Disturbance. Disturbance is inherent to the landscape to the extent that a grey dead forest, or a burnt forest, or a forest turned red by insect outbreak is no less healthy or no more an ecological aberration than the

culturally fetishized green forest. The extent to which disturbance constitutes a risk or a problem is wholly dependent on the position of the observer, human or nonhuman. In *The Mushroom at the End of the World* Anna Tsing writes about forest disturbance as an heuristic for understanding the complexity of socio-natural assemblages that are continuously made and remade in the context of an increasingly precarious social and ecological world.

Humanists, not used to thinking with disturbance, connect the term with damage. But disturbance, as used by ecologists, is not always bad – and not always human. [...] Disturbance is always in the middle of things: the term does not refer us to a harmonious state before disturbance. Disturbances follow other disturbances. Thus all landscapes are disturbed; disturbance is ordinary. [...] Whether a disturbance is bearable or unbearable is a question worked out through what follows it: the reformation of assemblages. (2015, p. 160)

Thinking with disturbance, the ongoing ecological change associated with the MPB outbreak in Colorado is primarily problematized by the social and cultural context in which this change has occurred, and the degree to which the visual changes and future disturbances (namely fire) believed to be more eminent or more destructive create new vulnerabilities (economic, physical and otherwise).

Donna Haraway writes that, “beings do not preexist their relatings” (Haraway 2003, p. 6). For as long as humans have inhabited forests, forest change has been linked to and understood through prevailing institutions and power arrangements (Knoblach, 1996). In the context of the MPB disturbance and ongoing forest change, the co-constitutive relationship between society and the lived environment is evident as forests respond to climate pressures and the

ecological legacy of historic land use patterns and contribute to different experiences of vulnerability via the land ownership regimes that vary across the region.

For private landowners the scale of property informed perceptions of risk, with the scale of property broadly corresponding to amenity orientation (with smaller properties primarily located in more amenity-oriented areas, and larger properties generally being more characteristic of extractive areas). Those whose residence was situated close to absentee landowners or public lands experienced a heightened sense of vulnerability to fire as surrounding forests filled with dead and dying timber and those reliant on public lands had to cope with reduced access as forests became impassable with up to 12 feet of downed timber in certain places (Walden Hunting Outfitter, personal interview, October 30, 2018).

While visual losses were culturally significant and new economic vulnerabilities emerged in the context of the outbreak, it constituted a more serious problem to the degree that it was understood as a precursor to catastrophic wildfire. The outbreak occurred at a time when fires were already increasing in frequency and severity as a consequence of historic drought throughout much of the western United States. Media coverage of the outbreak at the time framed the two disturbances as inextricably linked; nurturing a kind of beetle-fire orthodoxy in conversations about risk and the extent to which the MPB disturbance was cause for concern. With fire framed as a matter of “when, not if,” constituencies sought to enroll its inevitability in their specific discursive

constructions of the disturbance: its antecedents, effects, and needed response. Debate over the beetle-fire orthodoxy became a contest of environmental power/knowledges as forestry research began to challenge the common assumption that one disturbance invariably produced the other, thereby challenging industry calls for salvage logging in the name of public safety on public lands. In Summit County the looming prospect of fire challenged the previous opposition to cutting and catalyzed action to clear land in order to create wildfire defensible space around homes and neighborhoods, particularly those in the sought after and high-dollar Wildland-Urban Interface. As the nature of risks and perceptions varied across the region this brought up issues of environmental privilege, power, and the exclusions generated by both environmental and economic change.

Forests Versus Stems

Private property ownership in Summit County is characterized by small parcels of land as most residents live in neighborhoods and subdivisions that are situated close to forests. Grand County is situated to the north of Summit County and is comprised of smaller parcels in the south and east parts of the county where there are more second homeowners and the area is more amenity-oriented, and larger ranches to the north and west, where agriculture still dominates. Granby's central vantage for the county and the broader region afforded a way to see how the attitudes and experiences of more amenity-oriented and more extraction-oriented positionalities and narratives diverged. Grand county is referred to as an "island in the mountains" because reaching the

county from almost any direction requires going over a mountain pass. While spatially the county is closer to Denver, because it is less accessible it retains a rural quality that is absent in Summit County and along the I-70 corridor. Still, the county is experiencing cultural and economic changes associated with amenity migration. People who have lived in Granby their whole lives remark on the way that the county has felt the effects of both the local increase in population and the increase in the population of the Front Range as more day trippers and second homeowners move to the area. To the east, in the more amenity-oriented parts of the county there are more vacation properties and given the access to I-70 via Summit County, a number of people who live in Grand County but commute to Denver daily for work.

While the MPB and their ecological effects swept across the region without regard to the size of property parcel or public land designation, the scale of private property mediated the production of environmental subjectivities through the way that fire risk was perceived, and whether and when entities chose to act in response to that risk. In Summit County, the Extension Agent described the way that property provides a filter for understandings of environmental change that obscures attention to the landscape scale upon which that change is occurring:

Pretty much every structure has some wood in it, wood comes from trees, so we already have this acceptance that trees get cut down but when it comes to me doing the action, we often put our human value on stems. A forester would see the forest as more of an ecosystem at a landscape scale and not tree by tree by tree so much. And I think we do, when we get down to our parcel level – where I live – every tree has value like to me as a human. (personal interview, October 25, 2018)

In more amenity-oriented areas and on smaller properties, problems associated with the disturbance first centered around aesthetic loss, then fire and specifically the threat to property posed by fire. In the more agriculturally dominated parts of Grand County and Walden, the larger properties and greater number of individual trees on any particular piece of property lessened the sense of loss and consequently the resistance to conduct mitigation work in response to the disturbance. Since homes in Walden were generally not situated as closely to forests, fire was a salient concern, but that concern related more to a frustration with what was perceived to be poor forest management and the wasted resources that fire symbolized. From the central vantage provided in Granby, conversations clearly articulated how perceptions of risk were differentiated by property size and amenity orientation across the region. On a walk through downtown Granby the Director of the Middle Park Conservation District waved her hand back and forth as she gestured to the East and West ends of the County, describing the striking cultural differences between the two:

I think the bigger property owners and those closer to the West end where they are more tied to their land, and they understand the ecological impacts [...] they acted sooner than most. But these people more on the East end [...], they only have a half-acre or a quarter of an acre, and those one or two trees mean a lot to them. It's not like on a bigger acreage where they're not as sentimental (Director, Middle Park Conservation District, personal interview, October 26, 2018)

At the East end of the county there's more resistance [to cutting] than way out West, where it's historic ranching and things like that– they're used to managing the land. And then in Summit County we had a huge social license to do a lot of cutting when the pine beetle was active, and they were seeing all of these dead trees but then eventually

people were just like ah I'm sick of seeing all the log trucks. (CSFS Forester, personal interview, October 24, 2018)

Landscape changes and evolving fire risk led municipalities in Summit County to develop new policy approaches to fire management and property protection. In 2003 then President George W. Bush signed the Healthy Forest Restoration Act which expedited the environmental review process for mitigation and forest fuels reduction work and mandated that communities receiving federal funds for natural resource projects create a community wildfire protection plan (USDA, 2020). In the years leading up to the outbreak, when new houses were being built in Summit County the towns often required that people resituate the “footprint” of their house in order to minimize the number of trees that would have to be cut, sometimes costing tens of thousands of dollars to create new building plans (Summit County Extension Agent, personal interview, October 25, 2018). Following the passage of the Healthy Forest Restoration Act and as beetle mortality began to emerge at the landscape scale, fire departments began to grow concerned about being able to protect houses and other structures in the midst of changing forests and fuel structures. Municipalities reversed their previous course and began encouraging homeowners to create defensible space by clearing all trees and other combustible materials within 30 feet or the height of a fallen tree around their homes.

In 2008 the town of Breckenridge (in Summit County) went so far as to implement a *mandatory* defensible space ordinance; requiring that people cut the trees that were so culturally valued and that fewer than 10 years ago they had

been prohibited from cutting. The public backlash to this was swift and severe. In addition to homeowners, the Summit County realtor's association and builder's association opposed the mandatory defensible space ordinance and its anticipated effects to building and selling properties. Following the passage of the ordinance, the local paper was flooded with letters to the editor from residents expressing outrage that they would be required, at personal expense, to remove trees from their property. They pointed to the abundance of dead trees on public lands and lots with absentee property owners that remained unmitigated as more salient threats. From a letter to the editor of the Summit Daily in 2009:

First priority for fire safety is to "enforce" the timely removal of dead trees before cutting down live trees, and this is not being enforced. My neighbor, the empty lot across the street, has left standing over 100 dead lodgepole pines and these trees have been left standing for several years without enforcement. Are not dead trees 10 times the fire hazard of live trees? With the landscape quickly becoming "barren" property owners will likely not plant new trees because of the Ordinance. Last fall we spent \$20,000 planting new trees with the approval of both the town of Breckenridge and the Highlands HOA. Now, only six months later, some of our newly planted trees are within 30 feet of the house. Why were we not told? [...] Tree planting will come to a standstill with the uncertainty and the properties will be totally "barren." (Wendling and Wendling, Summit Daily, 2009)

After a petition was circulated opposing the ordinance, Breckenridge reversed course, rescinding the mandatory ordinance, and replacing it with a voluntary one striking what a councilman described as a "balance between personal responsibility and government prescription." While there were still many residents who were in favor of mandating defensible space as fire risks became more salient and frustrations with holdout property owners grew, the opposition

was better coordinated and the city council was reticent to have the issue put to a public vote (Allen, 2009).

Aside from towns requiring mitigation work on private lands, around this time the Forest Service had projects prepared to salvage dead and vulnerable timber from national forests in and around Summit County to mitigate wildfire danger and address the safety concerns generated by falling trees. Fearful of an increased timber industry presence in Summit County, a coalition of local community members and wilderness groups from throughout the state fought to obtain a wilderness designation for a portion of roadless area in White River National Forest totaling around 360,000 acres (Condon, 2010). The wilderness area would be called *Hidden Gems*. Given the stipulations of such designations, this would prevent in perpetuity any motorized or mechanized activity in the area. The public fight was contentious, with a broad coalition of recreational user groups forming in opposition to the proposal and nearly \$600,000 in primarily private and corporate contributions raised in support of *Hidden Gems* in three years (Condon, 2011). After a process in which various concessions were made to shrink the total area proposed, what emerged was a “pseudo-wilderness” designation that successfully derailed salvage logging projects but allowed the area to remain open for mountain bikers and other select recreation opportunities (Sutor, 2010).

Collaboration as Performance

Since 2010 and particularly with recent fires in Summit County, there has been a considerable shift in favor of more proactive forest management and

maintaining defensible space around homes and subdivisions. Local managers describe this as a “quantum shift” compared to when the outbreak began in the way people think about forest management and negotiating property protection in a disturbance-prone landscape. Many contend that the historic paradigms of management-versus-preservation have dissolved into a more nuanced array of distinct positionalities and “user groups,” and that the lessons learned in the context of the pine beetle outbreak have led to a recognition that forests are dependent on disturbance, and the suppression of natural disturbance like fire carries consequences. Still, social license for salvage logging on public lands has remained minimal. But the *Hidden Gems* debate and the rescinding of the 2008 mandatory ordinance raise the issue of power and privilege in environmental decision making. Summit County is known throughout the region as a wealthy and liberal community that is largely comprised of retirees who have the time and resources to participate in the local political process, specifically with regard to natural resource management. With the fight for *Hidden Gems*, the county Extension Agent described the strongest advocates for a wilderness designation saying:

This is a wealthy community and those who really said anything were the really white, wealthy, retired people. People who had time on their hands and “kiss my butt money” so they could say whatever they wanted and there was real resistance to doing any forest management right when mountain pine beetle came through initially. (personal interview, October 25, 2018)

In Summit County, much of the local involvement in forest management occurs through the Forest Health Task Force (FHTF), a county collaborative that is known throughout the region for its vocal and committed membership. The

group was formed in the early days of the pine beetle disturbance and remains highly active through their monthly meetings attended by government and forest management leaders, and in their coordinated “forest monitoring” efforts. The founder of the FHTF described the way that the group’s access to decision making power has grown as the community has grown through amenity migration:

FHTF Founder: I think there’s probably been cultural shifts just because a lot of people when I first came here were medium or average income [...] and then you have a lot of people who are retired and fortunately have more money and are able to build bigger houses and that kind of goes to what we’re talking about [...], Politically, people are engaged I want to say. Whether it’s community-wise or politically, people are very engaged. I think for the most part people feel like their voice matters to some extent and that’s one of the big issues is how much does my voice matter and how much influence can I have on the management of our forests.

Prentice: And people feel that their voices are heard?

FHTF Founder: Or if they’re not being heard we feel that people are really vocal about it. You know people feel like there’s somebody you can go to. Maybe the level of cynicism is not what it might be in other areas or larger cities. (personal interview, October 26, 2018)

Other regional actors identified the FHTF as a group enabled by the resources of the people in the area and expressed a degree of skepticism about collaborative frameworks insofar as they often become a platform to be dominated by the loudest voice in the room. This echoes a common critique of collaborative decision making over natural resource issues as the effort for inclusion often falls short and can simply create a new terrain for reproducing existing local power structures (see Walker and Hurley, 2004). In particular,

foresters from Grand County's office of the CSFS and the Middle Park

Conservation District described their experience working with the FHTF.

I mean, they had a lot of folks at the table. It's just that old saying: the squeaky wheel gets the grease [...] and that's not to say that all of them were opposed to [forest management] but there's a lot that were. They moved to – you hear this all the time – “we moved in the forest to live in the forest” you know, and they didn't want to see their trees cut. (CSFS Forester, personal interview, October 24, 2018)

Summit County, I feel like, is more of a retirement community. You have a lot more of the older population there that are retired and just livin' and lovin' life. And they have more time on their hands obviously. When I do workshops down in Summit County they're much better attended because they just, they have time. Whereas up here (Granby) we're still very much a working community. The people here are working 8:00-5:00 jobs and oftentimes because of the cost of living up here people are working two or three jobs and really have zero time because they're going from job to job to job. (Director, Middle Park Conservation District, personal interview, October 26, 2018)

The regional notoriety and influence of the FHTF is due not only to their resources, but their resources in the context of a region experiencing growing inequality in which for many working people, keeping up with the cost of living means disenfranchisement from the collaborative process. One frequently discussed example of how amenity migration has created challenges for working people was the housing crisis experienced across the region but manifesting most starkly in Summit County.

Our housing inventory is what it is, and 70 percent is unoccupied. We used to call it second homeowners, but I think in these mountain communities – Telluride, Steamboat, Vail, Summit County – we're like where the one percent of the one percent come. So the super, super wealthy come here and buy it all up. In the housing meeting that I was in yesterday it was said that the average single-family standalone home price on the free market in Summit County

right now is \$1.13 million. Who can get in on that? (Summit County Extension Agent, personal interview, October 25, 2018)

Summit County has struggled to house the low wage workforce that the resort and hospitality industry requires. Rental housing is cost prohibitive for the most vulnerable of these workers, so the county has recently adopted a program where certain parking lots are designated as safe places for people who are living out of their cars to park and sleep overnight. Prior to this program it was estimated that on any given night at least 100 “forest dwellers,” many of them working in Summit County, would sleep on national forest land (Kurbjun 2012). The program was designed to keep individuals out of national forests in the county overnight, particularly as fears of wildfire have increased.

The program allows a restricted number of vehicle dwellers who work in the county to park and sleep overnight in a designated location away from residents but close to bus routes. (Dutta 2020)

Figure 11. Residence on National Forest land in Summit County (photo: Kurbjun)

Grand County, which is also 60-70 percent second homeowners is experiencing a similar phenomenon as it moves towards an amenity-based economy where the local workforce is systematically excluded from available housing. Homeownership is increasingly unaffordable for many, and rental housing for the local workforce has been replaced by short-term rentals for vacationers.

We're having a housing crisis where the people who live here and work here can't afford to buy a home, and now there's no homes on the market to be able to do a long term rental because all of the homeowners see a short term rental [with entities such as VRBO or Airbnb] as a much more profitable business for them. So it's a very hard time to be able to find long term economical housing here. (Director, Middle Park Conservation District, personal interview, October 26, 2018)

The proliferation of short-term rentals poses challenges for community fire protection as well.

With the evacuation stuff with the change to short term rentals, it's hard. In the event of an evacuation they don't know the different routes to get out of the subdivisions that they're in. It's not as easy to get ahold of people if you're having a constant flow in and out every single week. (Director, Middle Park Conservation District, personal interview, October 26, 2018)

Aside from the way that the rising cost of living excludes many people from the collaborative process, the racial composition those involved in forest management is almost entirely white. In Silverthorne, one of the larger municipalities in Summit County, the elementary school is dual language with a majority Latinx and majority free and reduced lunch eligible students (National Center for Education Statistics). While census and school district data show that the Latinx population is steadily increasing in the county and all interviewees in Summit County mentioned this in conversations about area demographics, when it comes to conversations about forest management or collaborative work on natural resource issues this part of the population is noticeably absent. The Extension Agent for Summit County described how it was challenging to meet directives for diversity in attendance of Extension workshops and events.

We're all white. Except for the Latino population, we're white, upper middle class, I mean who plays golf and goes skiing? That's the people that live here and its expensive to live here and I don't know if it has something to do with the weather or what. (personal interview, October 25, 2018).

In other amenity destinations and in resort communities of the Rocky Mountains specifically, the in-migration of wealthy retirees has been coupled with

the in-migration of a Latinx population to support the expansion of the low wage service sector (Park and Pellow, 2013). Regarding how the demographic context of the county is shifting and how forest management perspectives might be informed by sociodemographic factors, the founder of the FHTF said:

We have a large Hispanic community here, which I welcome a lot of. Maybe it would be fair to say that they're focused on the American dream and there's opportunity here in Summit County and they're more focused on that than the more esoteric issues like how to manage a forest. (personal interview, October 26, 2018)

With the ability to participate in forest management discussions predicated on already holding a significant degree of privilege and influence, the “collaborative” paradigm is thrown into question.

Science is Like God. In collaborative settings, merely having a seat at the table means the ability to inform or derail efforts. CSFS described how with much of the public in the region, and especially with those who relocate to the high country from different climates, a challenge exists in educating them about local ecology and the need for disturbance or management actions that would mimic disturbance. Similar to the way the timber industry sought to enroll the inevitability of fire in narratives to obtain access to salvaged timber, among the highly educated population of Summit County and the FHTF specifically, ecology research becomes an important political tool and is enrolled in narratives in ways to promote the interests of members; variously aligning and conflicting with official narratives.

When the outbreak was emerging on a landscape scale the group served as a focal point of resistance to mitigation work, resisting a disruption to the “hands

off” approach that characterized forest management in the area with the refrain of “we moved to the forest to live in the forest,” and situating the removal of trees within the fight against climate change, since research showed that deforestation contributes to CO₂ emissions (FHTF Founder, personal interview, October 26, 2018; CSFS, personal interview, October 22, 2018). Over time the position against cutting softened and, the group is increasingly in support of proactive management, particularly to reduce fuel loading and create defensible space to protect property, now noting that megafires emerging throughout the West have been shown to contribute greater amounts of CO₂ than cutting.

Today one of the FHTF’s major efforts is in forest monitoring, where groups of volunteers visit sites throughout the county to collect data to contribute to forest planning models used by the Forest Service (Summit County Extension Agent, personal interview, October 25, 2018). As planning efforts contend with the vast unknowns associated with climate change, some voices within the FHTF have called for management in the high country to adopt the same controversial climate adaptation strategies recently employed by the Forest Service along the Front Range. There the Forest Service has adopted the practice of “assisted migration,” where forest restoration efforts selectively thin trees according to projections of how species dominance from one elevation zone to another will shift as the climate continues to warm (CSU Forest and Fire Ecologist, personal interview, October 21, 2018). Adopting the same strategies in the high country could be a way of heading off visual and other losses but at the moment as land managers face profound uncertainty regarding the way these sensitive high

elevation environments will continue to change, this remains a fringe discussion. Yet the hypothesis of ecosystem migration and the ability of FHTF members to deploy this knowledge in conversations with management professionals creates a situation where nearer-term management objectives like fire mitigation are derailed. A CSFS forester described how the work of consensus building becomes challenging when such research gets brought up in the context of management discussions regarding more proximate concerns. In response to the question of what a “challenging” meeting with the FHTF is like:

Oh it just gets into this stuff about how they don't want to cut. Or why are we doing that? Or a lot of topics like climate change is a hot topic everywhere and so we start diving into these off the wall topics about climate change and some crazy research that someone came up with saying that all the trees are gonna migrate and some silly stuff. Then it's like ok guys look, we can't be, if we're trying to manage stuff, we can't be talking about this. We need to manage what's here now, and as things change, we will adapt our management to address whatever the issue is whether its bugs, whether its climate change, whether its fire, or whatever the issue is and they just kind of get off in the weeds a little bit about some stuff. (personal interview, October 24, 2018)

Stephanie Rutherford (2007) writes about how ecology works as a power/knowledge regime, producing the truth about nature, the way it can be told, and by whom. This truth is always produced in relation to a social context and the power arrangements that define it. The relationship between ecological science and the contexts in which it is produced and deployed is described by the founder of the FHTF.

I think many people [...] have a skepticism about over-managing forests. Where they're skeptical that sometimes forests are being managed in a certain way for political reasons rather than true science. But you know science is an interesting thing. It's kind of like God. Everybody says well God's on my side, science is on my

side and they whip out their particular study. (personal interview, October 26, 2018)

In a group like the FHTF, the multifocal and diffuse nature of neoliberal green governmentality is evident. Power over environmental subjectivities is always becoming; produced from multiple sites and through multiple technologies of regulation. Aside from the material privilege of the FHTF relative to the rest of the region, they function as citizen arbiters of ecological knowledge; contributing to the production of knowledge through monitoring work and governing the way that knowledge is deployed is the context of a collaborative framework that eclipses other positionalities, experiences or vulnerabilities. In the style of neoliberal governance such groups allow for inclusion to be achieved rhetorically, and performatively, rather than in a material sense.

Wilderness and Wildernest

The majority of homes and businesses in Summit County are situated close to forests as forests have become increasingly suburbanized with the expansion of the Wildland-Urban Interface. Homes that are surrounded by trees are, and have been historically considered the most desirable, as trees offer seclusion and privacy. The founder of Summit County's Forest Health Task Force described how the cultural expectations associated with these residences and the influence of property owners create new experiences of environmental risk. Gesturing towards a luxury housing development at the base of Buffalo Mountain called Wildernest:

If people come in and they have say a little bit more money they're able to buy places closer into the woods [...]then that means if

there's a wildfire some of those homes have to be protected, and receive other sorts of services, and that kind of stretches [the county] thin. Particularly with the firefighting as the county has evolved. You have places like Wildernest which is kind of up over in this direction, along I-70, and it was built, as the name implies, to be in the trees, in the wilderness or next to the wilderness [...] and so the bark beetle had a big impact on that. However, the bigger impact is the wildfire danger which relates some to the bark beetle but maybe more to climate change and so the more people there are, the more development further into the woods, and the more that's at risk. (personal interview, October 25, 2018)

For many across the region and particularly for those in management roles, the link between insect disturbance and catastrophic wildfire was treated as indisputable. To speak of mountain pine beetle was to speak of fire and the extent to which an abundance of dead timber inherently elevated fire risks. A refrain that appeared throughout media reports on fire preparedness and mitigation work, and in interviews with management entities throughout the region regarding the likelihood of catastrophic wildfire was, "it's not a matter of if, but when." A voice of opposition to the beetle-fire orthodoxy emerged from certain residents in Summit County and preservation advocacy groups such as The Wilderness Society. At the peak of the outbreak these entities framed the link between the two as overstated at best, misleading and a ploy by the Forest Service to increase revenue through timber harvesting at worst. A Summit Daily article appearing in 2007 relayed discussions from a gathering of conservation groups including The Wilderness Society, Colorado Wild, and the Wildernest subdivision in Summit County:

Scientists and emergency managers Wednesday called for a measured response to the pine beetle infestation sweeping through

Colorado forests, emphasizing that the insect invasion is part of a natural cycle of destruction and renewal [...]

“Climate is driving fires in the Rocky Mountains, not beetles,” Kulakowski said. “All of the research shows that beetles have no, or only a minimal effect on fire risk, frequency or behavior.”

The Wilderness Society’s Tom Fry acknowledged that the pine beetle infestation has resulted in some social and economic challenges. But he said it’s important for the public to understand that the insects shouldn’t be seen as an environmental problem, but as part of a natural process. “Much of the discussion about what to do in the face of the beetle epidemic is focused on the fire danger to homes and other important facilities. And that risk has been overstated at times.” (Sutor, 2007)

Similarly, in an publication from the Wilderness Society appearing around the same time in the outbreak, the Senior Science Director distills the organization’s perspective on the disturbance and the extent to which it constitutes a problem into several talking points which emphasize that despite the scope and scale of the outbreak, the forests are resilient and sufficiently diverse to endure, and that beetle-killed trees do not pose any significant or particular danger in terms of erosion or fire (Aplet, 2009). At odds with management entities in the area, the Wilderness Society cautions against allowing the disturbance to change attitudes about minimal intervention management, pointing to climate change with its local effects of drought and warming winters as the principal cause of the disturbance.

The Wilderness Society’s position on mitigation work remains the same today, emphasizing a lack of options for wood utilization as further incentive to minimize human intervention in forests. The organization emphasizes the forest and fire ecology research that demonstrates the absence of a direct causal

relationship between beetle-kill and fire and argues that since wildlife habitat and woody biomass are being removed from the ecosystem, wood salvage efforts are unnecessary and possibly harmful to forests as they regenerate. (Wilderness Society Senior Science Director, personal interview, June 18, 2019). They contend that public perceptions, galvanized by the striking visual effects of the outbreak, have been essentially manipulated by forest managers and industry voices to believe that the forests are inherently a more dangerous place post-beetle.

In fact, while the abundance of dead timber is not shown to necessarily increase the risk of fire occurrence or intensity, to say that there is no elevated risk elides the fact that as the millions of trees killed by pine beetle decay and fall over, the forest becomes inaccessible to fire fighters. The argument that fire risks are unaffected by pine beetle confines risk to a relationship between discreet ecological variables (beetle-killed trees and fire) in a calculation erases human presence in the forests.

The mission of the Wilderness Society is the protection and expansion of designated wilderness areas. Like all actors, the organization constructs their narrative of the disturbance around their central commitments and vulnerabilities, in this case to forest preservation and resistance to industry presence in or claims to forests. Understanding cascading forest disturbances while assuming an ontological separation between objectified nature and subjective culture recalls the central irony of modernity as conceptualized by Latour (1985). Within

the Wilderness Society's narrative, the outbreak is unproblematic insofar as it is a natural event driven by climate, its contribution to the risk of wildfire is framed as minimal while their narrative owns that climate is also driving an increased risk of wildfire. Both are framed as natural (i.e. not human), largely unrelated disturbances yet both are causally linked to anthropogenic climate change.

Ultimately, the Wilderdest subdivision has emerged as a voice of "thorough support" for forest management and the creation of defensible space for property protection after a recent wildfire occurred in close proximity to homes. During the Buffalo Mountain Fire in 2018, firebreaks that had been created by the Forest Service, CSFS and neighborhood homeowners' associations following a contentious debate ended up protecting over 1,000 residences (Dutta, 2018). A CSFS forester described the way attitudes changed in relation to the fire:

Well it happened in their backyard. Finally, they had a fire and they saw the impacts. I had this quote in the paper [laughing] that people are finally realizing what we're doing is right, we're not just cutting trees for the heck of it. (personal interview, October 24, 2018)

The way the Buffalo Mountain Fire so perfectly illustrated the protective role that defensible space can play raised questions among certain Forest Service skeptics in the area, with some quietly suggesting that the Forest Service itself was responsible for starting the fire since the cause is still undetermined (Summit County wilderness advocate, personal communication, June 20, 2019).

The concern for fire and belief in forest management for property protection manifests new technologies of self and signals of environmental

virtuosity that revolve around fire preparedness. A cultural premium is attached to having a home or being part of a neighborhood that has been professionally assessed and mitigated for fire danger. The CSFS is the local administrator for the National Fire Protection Association program called “Firewise” which aims to enhance the survivability of homes and neighborhoods in the Wildland-Urban Interface. Through the program, homes are evaluated for fire risk by fire departments and foresters, then once homeowners and homeowners’ associations make investments in the risk reduction and mitigation work deemed necessary, they ultimately receive a sign indicating that they are “a Firewise community.” Living in a Firewise community is a point of pride for residents and entails an ongoing commitment as fire risks and protection plans are frequently reviewed and updated.

The insurance industry has also emerged as a governing entity in mountain communities affected by ongoing ecological changes. As wildfires have increased in frequency and intensity, homeowners have been obligated to conduct fire mitigation work rather than lose their insurance. Those in management roles spoke about this as a final pressure for homeowners who had been reluctant to create defensible space.

The last little piece is insurance. The insurance companies have started coming out saying that “we’re not going to insure you if you don’t have defensible space around your home because you live where wildfire lives – the inevitability is your house is gonna burn down and we’re not gonna insure you for that unless you take some precautionary steps. (Summit County Extension Agent, personal interview, October 25, 2018)

So people are coming to us saying I just got dropped by my insurance, what do I need to do to get my insurance back, and that

has actually helped us get the word out. These insurance companies are dropping people left and right and I mean literally, left and right. (Director, Middle Park Conservation District, October 26, 2018)

Local Knowledge and Resistance in North Park

In Walden, conversations consistently refer to the accumulating resentment that comes from feeling a lack of political representation at the state or federal level. Residents allude to the long-rumored political secession of the northern part of the state from the more populous and politically liberal south, with one resident saying pointedly about the lack of economic stability, deep sense of conflicting cultural values and lack of political voice: “that’s how revolutions start.” As an outlier in the experience of rapid population growth that has defined much of Colorado in recent decades, residents discuss the way that their livelihoods and modes of engagement with the local environment feel increasingly determined by extra-local forces. Aside from the collapse of the timber industry, and the way that grazing access has changed as forests fill with downed timber, residents spoke about the way that Jackson County exists in relationship to the rest of the state as the site for reintroducing endangered species and relocating predator species from urban areas. On a walk in the Routt National Forest in Jackson County, the editor of the local paper and a lifetime resident of Walden spoke of the way that the state’s value for biodiversity and species management affects local life:

Well it goes even to other species: the sage grouse or other endangered species, I mean you have governors fighting over how a brood is going to be managed and it affects a lot more land and states than Colorado but North Park is in the middle of it because

we have the most pristine sage grouse habitat of anybody in the West.

When they want to reintroduce that stuff, they always want to do it in Jackson county. Or like when Denver has a bear problem, they trap the bear, they bring the bear to Walden. And if it shows back up in Denver, they kill it, if it shows up in Rand (a small community in Jackson County) it's no big deal; it's just a regular day in Jackson County. (Editor, Jackson County Star, personal interview, October 30, 2018)

In the perspective of many in Jackson County, the local landscape becomes enrolled in the networks and ecological imaginaries of those with the power to discursively and materially define what these places should be, the interests they should serve, and the species that should inhabit them, regardless of the preferences of the existing community.

Yet the power over environmental knowledges and subjectivities is not fully asymmetrical. Locally it's common knowledge (albeit discussed discreetly) that grey wolves are present in North Park, though officially wolves haven't been present in Colorado since 1940 (Colorado Parks and Wildlife). Publicizing their presence would make the area the subject of study and elicit greater state oversight and regulation of land use to protect the species that was only removed from the endangered species list in 2019. Similarly, residents quietly mention grizzly bear sightings in North Park though again, grizzlies have not been officially present the state since the 1950's (Borden, 2010).

Residents retain a skepticism about the knowledge systems that produce endangered or threatened species classifications, similar to their skepticism of the research that suggests that fire risks are not significantly elevated by the extent of pine beetle mortality.

I can remember one [meeting with the Forest Service], and a gentleman talked to us and was telling us that dead red trees were not as big a fire hazard as we thought they were. He said that the green trees would burn just as easy, and not to be concerned about the acres and acres of this dead red timber. And he spoke – an educated man – and when he got through, I asked him sir, do you ever camp? And he said yes, my family likes it real well, and I said and when you go build a campfire, do you go to the greenest prettiest tree you can and cut the limbs off of it to start your fire? (Jackson County Commissioner, personal interview, November 2, 2018)

As forests continue to fill with fallen trees, when fires start on Forest Service land in Jackson County the local fire department flouts directives that require permission to fight the fire.

Our fire chief, when we'd get a lightning strike him and his boys would go in and put it out and then they'd scuff their toe on the ground and tell the Forest Service say we're awful sorry. But if you did that through the right channels it'd be two to three days before you got everybody to approve fighting a little fire and then in that two or three days it went from a spot that a few firefighters could take care of to an unbelievable fire. (Jackson County Commissioner, personal interview, November 2, 2018)

The area's remoteness allows for (or perhaps even requires given the associated vulnerability) a similar dismissal of the regulations that govern access to designated wilderness areas, even in emergency situations.

You cannot have any machinery on a wilderness area. You can't have cars, you can't have bicycles, you can't have motorcycles. So if you're hiking up there and you fall and break your leg, and you need to be carried out by helicopter, the helicopter needs to get permission from the US Forest Service before it can land, to take out somebody with a broken leg. And the general policy around here is it's easier to ask for forgiveness than it is to ask for permission. So they just do it and then get yelled at later. (Walden Mayor, personal interview, October 30, 2018)

In Walden, the experience of conflict with the rest of the state is not only oriented by this clash of environmental knowledges and vulnerabilities but the

extent to which these experiences, which are embodied and material, are produced by competing capitalist constructions of the natural world and the type of commodity that mediates socio-natural relationships. In conversation with the founder of the FHTF and the Senior Science Director of the Wilderness Society, the difference between the perspectives and narratives of those in a place like Walden versus an amenity destination focused on landscape preservation can be attributed to a relatively simple difference of culture and identity.

It kind of goes back to the farmers versus the whatever, so we kind of put the timber industry in the farming camp, it kind of was the belief that if we could manage all this landscape in an active way then it's gonna be a better world or a healthier forest, that's how you achieve a healthy forest right, and people believe it in their cores, whereas another group of people might believe that yes the timbering can be beneficial but we're really here to enjoy this beauty that mother nature gave us that we can recreate in and cutting all this down really wouldn't get us any further ahead anyway. It's not even so much political or anything it's just what you know, it's what you believe. (FHTF Founder, personal interview, October 26, 2018)

Today I think it really just comes down to rural versus urban. Or honestly, red versus blue. (Senior Science Director, Wilderness Society, personal interview, June 18, 2018)

Conclusion

The Land Changes

The globalization of the production process (Robinson, 2004) means the emergence of globalized patterns of accumulated environmental burden and privilege. Amenity destinations have emerged as privileged places, where landscape transformation through the cutting of trees or the reconfiguration of watersheds is permitted insofar as it protects and extends certain types of property. Yet the continuous development and expansion of these destinations implies a complicity with if not comfort in continuous resource extraction and consumption, so long as that extraction occurs out of sight and does not infringe upon the specific externalized and commodified construction of nature upon which the amenity economy depends. This contradiction perpetuates relationships of inequality at multiple scales, from the local to the global and carries the assumption that only some places, natures and knowledges are worthy of preservation. While amenity destinations like Summit County offer a stark example of this, the pattern can be observed in the broader relationship between the United States and the other countries to which primary commodity production has been outsourced.

At the regional scale this economic transformation enrolls human and nonhuman actors in new political configurations that continue to evolve as the forest regenerates in new ways, after laying bear the tenuousness of that claim to a static and aestheticized nature. The characteristics of the next forest remain uncertain as the region, like the rest of the planet, responds to increasing

pressures and reduced planning capacity in the context of climate change. In response to the question of what the future holds, for the community and the forest, the Extension Agent in Jackson County responded:

Well that's the question, isn't it? In the aridification of the West, will the forest come back? Or at what elevation will it come back? You know I would foresee if we stay dry or if we get dryer, we will not see forest regeneration at the same elevations. You'll end up with sage moving up the slopes and the trees will start higher up, and it will be a skinnier band of the forest in the future. The forest is successional, and aspen are the pioneer species, and in a lot of the forests in Colorado they're not seeing the aspen regenerate. They're not regenerating because there's not enough water, so they just get attacked by all these minor bark beetles and die, because they're thirsty. That's gonna change the landscape, just with this change in where water is distributed across the internal portions of the US. *The land changes*. (personal interview, October 30, 2018)

Normative ideas about the environment and values regarding how natural spaces should look or the kinds of activities that should orient human encounters with the nonhuman world are invariably political. Yet political agency is not confined to industry representatives or public agencies, but resides – perhaps increasingly so as ecological futures become more precarious – in the nonhuman world. Leading up to disturbance in the forests of north central Colorado was a conflict in which paradigmatic capitalist discourses of the environment clashed in their attempt to know and narrate the forest in their own image. At once constructed as resource or refuge by disparate entities across the region, disturbance imbued the forest with agency to expose the way that socio-ecological communities had articulated in relation to power and the way that local narratives of attribution corresponded to global governing discourses of the environment. The meaning of the changing image of the landscape illustrated

this, as the changing image posed a challenge to normative assumptions of stasis and equilibrium in protected, commodified landscapes and provided validation for those whose livelihoods had been delegitimized by dominant environmental discourses, materially enacted by land management policies. The competing narratives of the decline of the timber industry showed how the production of environmental subjectivities was mediated by different commodities – timber or natural amenities – that connected local ecological change to global political economic processes. Experiences of risk in the context of the outbreak itself and with the prospect of future disturbances were informed by property and the ecological legacy of land management policies.

As Tsing writes, “with disturbance, there is always a problem of perspective, based, in turn, on ways of life” (2015, p. 161). Narratives of disturbance articulate these different perspectives, connecting environmental change to social patterns and processes via embodied experiences. Narratives integrate cultural, material, and institutional contexts, places and processes as they articulate the stakes of disturbance for different groups.

These disturbance narratives revealed the many internal contradictions engendered by ongoing environmental and political economic change. Beginning early in the settled history of the West the policy of fire suppression conflicted with ecological dependence on regular disturbance in the form of fire. The exclusion of fire was a key means of constructing the landscape as an object of regulation and control and enabling widespread development in mountain communities. The wilderness discourse and the construction of nature that

underpins the amenity economy seeks to render nature fixed, neutral and externalized – simultaneously protected from human influence while made to fulfill human desires. As the disturbance unfolded the area was faced with having a glut of wood and no markets as public perceptions of logging combined with political economic change over the past decades has left the local timber industry effectively incapacitated. Finally, the expansiveness of public lands in the West and the power that is officially vested in the Forest Service is at odds with the resources the agency possesses to manage beyond responding to immediate concerns like fighting wildfires.

Landscape preservation and the prioritization of ecosystem services over resource extraction is a seemingly justifiable response to the threats associated with over-exploitation and the desire to be more conscious of environmental limits. But it is far from politically neutral, and as these preserved landscapes have been produced as sites of global environmental privilege, they have been so with the assertion that other places are worth sacrificing. Both preservation and sacrifice seek to strip nature of agency, extract it from history, and devolve responsibility for environmental problems to individual people to buy the right products or live in the right place if they want to be free of environmental harm. As the land changes, it reveals the precariousness of this arrangement.

References Cited

- Abrahamson, S. (2004). Migration and inequality in the United States: Connecting urban to rural and local to global. *Social Stratification*, 8(3): 324-335.
- Adger, W., Brown, K., Fairbrass, J., Jordan, A., Paavola, J., Rosendo, S., Seyfang, J. (2003). Governance for sustainability: Towards a 'thick' analysis of environmental decisionmaking. *Environment and Planning A*, 35(6), 1095–1110.
- Agrawal, A. (2005). *Environmentality: Technologies of government and the making of subjects* Durham, NC: Duke University Press.
- Allen, R. (15 July 2009). Breck Defensible Space Petition Certified; Council to Reconsider. (8 May 2020). Retrieved from <https://www.summitdaily.com/news/breck-defensible-space-petition-certified-council-to-reconsider/>
- Arno, S. F., and Allison-Bunnell, S. (2013). *Flames in our forest: Disaster or renewal?*. Washington, DC: Island Press.
- Árvai, J. (2014). The end of risk communication as we know it. *Journal of Risk Research*, 17(10), 1245–1249.
- Aplet, G. (2009). Understanding the Mountain Pine Beetle; Seven facts you need to know. *The Wilderness Society*. Retrieved from <http://wilderness.org/blog/understanding-mountain-pine-beetle-seven-facts-you-need-know>
- Appleton, A., (2002). How New York City used an ecosystem services strategy carried out through an urban-rural partnership to preserve the pristine quality of its drinking water and save billions of dollars and what lessons it teaches about using ecosystem services. (4 April 2020) Retrieved from <https://www.cbd.int/financial/pes/usa-pesnewyork.pdf>
- Beck, U. (1992). *Risk society*. London, United Kingdom: SAGE Publications.
- Bee, B. (2016). Power, perception, and adaptation: Exploring gender and social-environmental risk perception in northern Guanajuato, Mexico. *Geoforum*, 69, 71–80.

- Bentz, B. J., Régnière, J., Fettig, C. J., Hansen, E. M., Hayes, J. L., Hicke, J. A., Seybold, S. J. (2010). Climate change and bark beetles of the western United States and Canada: Direct and indirect effects. *BioScience*, 60(8), 602–613.
- Bina, T. (2008, June 9). Grand county agenda focuses on water issues, beetle kill mitigation. *Sky-Hi News*. Retrieved from <https://www.skyhinews.com/news/grand-county-agenda-focuses-on-water-issues-beetle-kill-mitigation/>
- Binkley, D., and Duncan, S. L. (2009). The past and future of Colorado's forests: Connecting people and ecology. *Ecology and Society*, 14(2).
- Bixler, R. P. (2013). The political ecology of local environmental narratives: Power, knowledge, and mountain caribou conservation. *Journal of Political Ecology*, 20(1), 273-285.
- Bolin, B., Stanford, L. (1998). *The Northridge earthquake: vulnerability and disaster*. London, United Kingdom: Routledge.
- Borden, A. (13 June 2019). You asked: Does Colorado have grizzly bears? No, we killed them all. *Colorado Public Radio*. Retrieved from <https://www.cpr.org/2019/06/13/you-asked-does-colorado-have-grizzly-bears-no-we-killed-them/>
- Bowes, M. D., and Krutilla, J. V. (1985). Multiple use management of public forestlands. *Handbook of Natural Resource and Energy Economics*, 2, 531-569.
- Bureau of Reclamation. Colorado-Big Thompson project. (8 April 2020). Retrieved from <https://www.usbr.gov/projects/index.php?id=432>
- Bridger and Luloff. (1999). Toward an interactional approach to sustainable community development. *Journal of Rural Studies* 15(4): 377-387.
- Burns, T.W., O'Connor, D.J., Stockmayer, S.M. (2003). Science communication: A contemporary definition. *Public Understanding of Science*, 12, 183–202.
- Carle, D., and Kaufmann, J. (2002). *Burning questions: America's fight with nature's fire*. Westport, CT: Greenwood Publishing Group.

- Carroll, A. L., Taylor, S. W., Régnière, J., Safranyik, L., Shore, T. L., Brooks, J. E., and Stone, J. E. (2003). Effects of climate change on range expansion by the Mountain Pine Beetle in British Columbia. Victoria, BC: Pacific Forestry Centre.
- Chang, W. Y., Lantz, V. A., MacLean, D. A. (2009). Public attitudes about forest pest outbreaks and control: Case studies in two Canadian provinces. *Forest Ecology and Management*, 257(4), 1333–1343.
- Cheek, T. (11 June 2015). 80 percent of Denver public school kids have never been to the mountains. *The Colorado Independent*. Retrieved from <https://www.coloradoindependent.com/2015/06/11/80-percent-of-denver-public-school-kids-have-never-been-to-the-mountains/>
- Clifford, J., and Marcus, G. E. (Eds.). (1986). *Writing culture: The poetics and politics of ethnography: A school of American research advanced seminar*. University of California Press.
- Collins, T. (2008). The political ecology of hazard vulnerability: Marginalization, facilitation and the production of differential risk to urban wildfires in Arizona's White Mountains. *Journal of Political Ecology*, 15, 21–43.
- Colorado Department of Local Affairs (DOLA). (4 April 2020). *Colorado demographic profiles: Jackson County*. Retrieved from <https://gis.dola.colorado.gov/apps/ProfileDashboard2/>
- Colorado Parks and Wildlife. (13 May 2020). *Wolves*. Retrieved from <https://cpw.state.co.us/wolves>
- Colorado State Forest Service (CSFS). (2005). *2004 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2006). *2005 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2007). *2006 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2008). *2007 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.

- Colorado State Forest Service (CSFS). (2009). *2008 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2010). *2009 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2011). *2010 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado State Forest Service (CSFS). (2016). *2015 report on the health of Colorado's forests*. Fort Collins, CO: Colorado State Forest Service.
- Colorado Timber Industry Association (CTIA). (2004). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2005). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2006). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2007). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2008). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2009). Colorado Timber Industry Association. Timber Times Newsletter.
- Colorado Timber Industry Association (CTIA). (2016). Colorado Timber Industry Association. Timber Times Newsletter.
- Condon, G. (12 June 2020). Hidden gems: No more concessions for recreation. *Summit Daily*. (22 April 2020). Retrieved from <https://www.summitdaily.com/news/hidden-gems-no-more-concessions-for-recreation/>
- Cronon, W. (1996). The trouble with wilderness: Or, getting back to the wrong nature. *Environmental history*, 1(1), 7-28.
- Dale, V.H., Joyce, L., McNulty, S., Neilson, R.P. (2000). The interplay between climate change, forests, and disturbances. *Science of The Total Environment*, 262(3), 201–204.

- Dale V.H., Joyce L.A., McNulty S., Neilson R.P., Ayres M.P., Flannigan M.D., Hanson P.J., Irland L.C., Lugo A.E., Peterson C.J., Simberloff, D., Swanson, F.J., Stocks, B.J., Wotton, M., (2001). Climate change and forest disturbance. *BioScience*, 51(9), 723–734.
- Davis, E.J., Reed M. (2013). Multi-level governance of British Columbia's Mountain Pine Beetle crisis: The roles of memory and identity. *Geoforum*, 47, 32–41.
- Demeritt, D. (2001). Scientific forest conservation and the statistical picturing of nature's limits in the progressive-era United States. *Environment and Planning D: Society and Space*, 19(4), 431–59.
- Denver Public Schools (DPS). Facts and figures DPS by the numbers. (5 March 2020). Retrieved from <https://www.dpsk12.org/about/facts-figures/>
- Diaz, H. F., and Swetnam, T. W. (2013). The wildfires of 1910: Climatology of an extreme early twentieth-century event and comparison with more recent extremes. *Bulletin of the American Meteorological Society*, 94(9), 1361–1370.
- DiGuistini, S., Ralph, S. G., Lim, Y. W., Holt, R., Jones, S., Bohlmann, J., and Breuil, C. (2007). Generation and annotation of lodgepole pine and oleoresin-induced expressed sequences from the blue-stain fungus *Ophiostoma clavigerum*, a Mountain Pine Beetle-associated pathogen. *FEMS Microbiology Letters*, 267(2), 151–158.
- Denzin, N., Lincoln, Y. (Eds.). (1998). *Collecting and interpreting qualitative materials*. Thousand Oaks, CA: SAGE Publications.
- Donovan, G. H., and Brown, T. C. (2007). Be careful what you wish for: The legacy of Smokey Bear. *Frontiers in Ecology and the Environment*, 5(2), 73–79.
- Dutta, D. (14 February 2020). Workgroup kicks off overnight parking program discussion for working homeless in Summit County. (6 May 2020) *Summit Daily*. Retrieved from <https://www.summitdaily.com/news/workgroup-kicks-off-overnight-parking-program-discussion-for-working-homeless-in-summit-county/>

- Duncan, J., and Duncan, N. (1988). (Re) reading the landscape. *Environment and Planning D: Society and Space*, 6(2), 117-126.
- Field, D., Burch, W. (1988). *Rural sociology and the environment*. New York: Greenwood Press.
- Finewood, M. H. (2012). Feeling the squeeze: a political ecology of race and amenity-based development in coastal Bluffton, South Carolina. *Local Environment*, 17(9), 991-1011.
- Flint, C. G. (2006). Community perspectives on spruce beetle impacts on the Kenai Peninsula, Alaska. *Forest Ecology and Management* 227(3), 207–218.
- Flint, C. G., Luloff A. E. (2007). Community activeness in response to forest disturbance in Alaska. *Society and Natural Resources* 20(5), 431–450.
- Flint, C. G., McFarlane, B., Müller, M. (2009). Human dimensions of forest disturbance by insects: An international synthesis. *Environmental Management*, 43(6), 1174–1186.
- Flint, C., Qin, H., Ganning, J. P. (2012). Linking local perceptions to the biophysical and amenity contexts of forest disturbance in Colorado. *Environmental management*, 49(3), 553–569.
- Ford, A., and Norgaard, K. M. (2020). Whose everyday climate cultures? Environmental subjectivities and invisibility in climate change discourse. *Climatic Change*, 1-20.
- Ghose, R. (2004). 'Big sky or big sprawl? Rural gentrification and the changing cultural landscape of Missoula, Montana.' *Urban geography* 25(6): 528–549.;
- Gobo, G. (2008). *Doing ethnography*. Los Angeles, CA: SAGE Publications.
- Goedeke, T. L., and Rikoon, S. (2008). Otters as actors: Scientific controversy, dynamism of networks, and the implications of power in ecological restoration. *Social Studies of Science*, 38(1), 111-132.
- Golding, S. A. (2014). Migration and inequality in the rural United States: Connecting urban to rural and local to global. *Sociology Compass*, 8(3), 324-335.

- Golding, S. A. (2016). Gentrification and segregated wealth in rural America: Home value sorting in destination counties. *Population Research and Policy Review*, 35(1), 127-146.
- Gosnell, H. and Abrams, J. (2011). Amenity migration: diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *GeoJournal*, 76(4): 303-322.
- Gorte, J. K. (1979). *Application of economic techniques to fire management: A status review and evaluation* (Vol. 53). Intermountain Forest and Range Experiment Station, Forest Service, US Department of Agriculture.
- Greider, T., and Garkovich, L. (1994). Landscapes: The social construction of nature and the environment. *Rural sociology*, 59(1), 1-24.
- Haraway, D. J. (2003). *The companion species manifesto: Dogs, people, and significant otherness* (Vol. 1, pp. 3-17). Chicago, IL: Prickly Paradigm Press.
- Harmon, G. (2 February 2010). Caught between beetle and a hard spot in the economy. Denver Post.
- Hackett J. (2007). Colorado's Mountain Pine Beetle infestation offers important lessons about managing future forests. *Colorado Conservator* 23(2), 8–9.
- Hewitt, K. (1997). *Regions of risk: A geographical introduction to disasters*. Essex, U.K.: Longman.
- Hunter, L. M., Boardman, J. D., and Onge, J. M. S. (2005). The association between natural amenities, rural population growth, and long-term residents' economic well-being. *Rural Sociology*, 70(4), 452-469.
- Huber, A., Gorostiza, S., Panagiota, K., Beltrán, M.J., Armiero, M. (2017). Beyond “socially constructed” disasters: re-politicizing the debate on large dams through a political ecology of risk. *Capitalism Nature Socialism*, 28(3), 48–68.
- Hurley, P., Walker, P. (2004). Whose vision? Conspiracy theory and land-use planning in Nevada County, California. *Environment and Planning A*, 36, 1529–1547.

- Hurley, P. (2013). *Whose sense of place? A political ecology of amenity development*. in Stewart, Williams, and Kruger (Eds.), *Place-Based Conservation: Perspectives from the Social Sciences*. New York, NY: Springer.
- Keegan, C. E., Sorenson, C. B., Morgan, T. A., Hayes, S. W., and Daniels, J. M. (2011). Impact of the great recession and housing collapse on the forest products industry in the western United States. *Forest Products Journal*, 61(8), 625-634.
- Knobloch, F. (1996). *The culture of wilderness: Agriculture as colonization in the American West*. Chapel Hill, NC: University of North Carolina Press.
- Kooistra, C. M., Hall, T. E. (2014). Understanding public support for forest management and economic development options after a Mountain Pine Beetle outbreak. *Journal of Forestry*, 112(2), 221–229.
- Kraenzel, C. F. (1955). *The Great Plains in transition*. Norman, OK: University of Oklahoma Press.
- Kurbjun, J. (9 July 2012). Forest dwellers abound in Summit County. Summit Daily (20 April 2020). Retrieved from <https://www.summitdaily.com/news/forest-dwellers-abound-in-summit-county/>
- Larmer, P. (1997, November 24). Freak wind storm flattens 6 million trees. High Country News. (5 April 2020) Retrieved from <https://www.hcn.org/issues/119/3803>
- Larsen, S., Foulkes, M., Sorenson, C., Thompson, A. (2011). Environmental learning and the social construction of an exurban landscape in Fremont County, Colorado. *Geoforum*, 42, 83–93.
- Latour, B. (2012). *We have never been modern*. Cambridge, MA: Harvard University Press.
- Luckert, M. K., and Williamson, T. (2005). Should sustained yield be part of sustainable forest management?. *Canadian Journal of Forest Research*, 35(2), 356-364.

- Lynch, D. L., and Mackes, K. (2003). Costs for reducing fuels in Colorado forest restoration projects. *Fire, Fuel Treatments, and Ecological Restoration. Proceedings RMRS-P-29. USDA Forest Service, Ft. Collins, CO*, 167-175.
- Marcus, G. E. (1995). Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology*, 24(1), 95-117.
- McCay, B. and Jentoft, S. (1998). Market or Community Failure? Critical Perspectives on Common Property Research. *Human Organization*, 57(1), pp. 21-29.
- McDavid, D. (2013, April 12). Guest Opinion: Let's Make Our Forests Green Again. *Sky-Hi News*. Retrieved from <https://www.skyhinews.com/opinion/guest-opinion-lets-make-our-forests-green-again/>
- McFarlane B.L., Wilson, D.O.T., (2008). Perceptions of ecological risk associated with Mountain Pine Beetle (*Dendroctonus ponderosae*) infestations in Banff and Kootenay National Parks of Canada. *Risk Analysis*, 28(1), 203–212.
- McFarlane, B.L., Parking, J.R., Watson, D.O.T. (2012). Risk, knowledge and trust in managing forest insect disturbance. *Canadian Journal of Forest Research*, 42(4), 710–719.
- McFarlane, B.L., Parkins, J., Romanowski, S. (2015). Expert perceptions of media reporting on a large-scale environmental risk issue: Insights from Mountain Pine Beetle management in Alberta, Canada. *Canadian Journal of Forest Research*, 46(1), 1–9.
- Miller, A. (2006, August 7). Death of a Forest. *Vail Daily*. Retrieved from <https://www.vaildaily.com/news/death-of-a-forest/>
- Mitchell, D. (2000). *Cultural geography: A critical introduction*. Oxford, England: Blackwell.
- Molnar JJ, Schelhas J., Holeski C. (2007). Nonindustrial private forest landowners and the southern pine beetle: factors affecting monitoring, preventing, and controlling infestations. *Southern Journal of Applied Forestry*, 31(2), 93–98.

- Müller, M. (2011). How natural disturbance triggers political conflict: Bark beetles and the meaning of landscape in the Bavarian Forest. *Global Environmental Change*, 21(3), 935–946.
- Müller M., Job, H. (2009). Managing natural disturbances in protected areas: tourists' attitude toward the bark beetle in a German national park. *Biological Conservation* 142(2), 375–383.
- National Center for Education Statistics (2019). District details: Summit County District. Retrieved from https://nces.ed.gov/ccd/districtsearch/district_detail.asp?ID2=0806810
- Nelson, P. B., Nelson, L., and Trautman, L. (2014). Linked migration and labor market flexibility in the rural amenity destinations in the United States. *Journal of Rural Studies*, 36, 121-136.
- Nelson, S. (2017). Containing Environmentalism: Risk, Rationality, and Value in the Wake of the Exxon Valdez. *Capitalism Nature Socialism*, 28(1), 118–136.
- Northwest Colorado Council of Governments (NWCCOG). Grand County Census Demographics. (2020, January 20). Retrieved from <http://nwccog.org/resources/demographics-of-the-region/grand-county/>
- Northwest Colorado Council of Governments (NWCCOG). Jackson County Census Demographics. (2020, January 23). Retrieved from <http://nwccog.org/resources/demographics-of-the-region/jackson-county/>
- Northwest Colorado Council of Governments (NWCCOG). Summit County Census Demographics. (2020, January 13). Retrieved from <http://nwccog.org/resources/demographics-of-the-region/summit-county/>
- Nygren, A. (2004). Contested lands and incompatible images: the political ecology of struggles over resources in Nicaragua's Indio-Maíz Reserve. *Society and Natural Resources*, 17(3), 189-205.
- O'Keefe, P., Westgate, K., Wisner, B. (1976). Taking the “naturalness” out of “natural disaster.” *Nature*, 260(5552), 566–567.
- Oliver-Smith, A., and Hoffman, S. (Eds). (1999). *The Angry Earth: Disaster in Anthropological Perspective*. London, United Kingdom: Routledge.

- Park, L. S. H., and Pellow, D. N. (2013). *The slums of Aspen: Immigrants vs. the environment in America's Eden* (Vol. 2). New York, NY: NYU Press.
- Parkins J.R., MacKendrick N.A. (2007). Assessing community vulnerability: A study of the Mountain Pine Beetle outbreak in British Columbia, Canada. *Global Environmental Change* 17(3-4), 460– 471.
- Peet, R. K. (2000). *Forests and Meadows of the Rocky Mountains*. pp. 75– 122 in M. G. Barbour and W. D. Billings, editors. *North American Terrestrial Vegetation*. Second edition. Cambridge University Press, New York, NY, USA
- Petersen, B., Stuart, D. (2014). Explanations of a changing landscape: a critical examination of the British Columbia bark beetle epidemic. *Environment and Planning A*, 46(3), 598–613.
- Porth, E., Dandy, Norman, D. Marzano, M. (2015). “My garden is the one with no trees: Residential lived experiences of the 2012 Asian longhorn beetle eradication program in Kent, England. *Human Ecology*, 43(5): 669–679.
- Power, T.M. and Barrett, R.N. (2001). *Post-cowboy economics: Pay and prosperity in the new American West*. Washington DC: Island Press.
- Prentice, E.W., Qin, H., Flint, C.G. (2018). Mountain pine beetles and ecological imaginaries: the social construction of forest insect disturbance. In J. Urquhart, M. Marzano & C. Potter (Eds.), *Human Dimensions of Forest and Tree Health: Global Perspectives*. Zurich, Switzerland: Palgrave MacMillan, 77-107.
- Qin, H., and Flint, C. G. (2010). Capturing community context of human response to forest disturbance by insects: A multi-method assessment. *Human Ecology*, 38(4), 567–579.
- Qin, H., Flint, C. G., (2012). Integrating rural livelihoods and community interaction into migration and environment research. *Society and Natural Resources*, 25(10), 1056–1065.
- Qin, H., Flint, C. G., Luloff, A.E., (2015). Tracing temporal changes in the human dimensions of forest insect disturbance on the Kenai Peninsula, Alaska. *Human Ecology*, 43(1), 43–59.

- Qin, H. (2016). Comparing newer and longer-term residents' perceptions and actions in response to forest insect disturbance on Alaska's Kenai Peninsula: A longitudinal perspective. *Journal of Rural Studies*, 39, 51–62.
- Qin, H., Prentice, E., Brenkert-Smith, H., Sanders, C., Vickery, J. (2019). Mountain pine beetles and Colorado forests: findings from a re-survey of Colorado community residents. <https://hdl.handle.net/10355/70377>
- Quinton, S. (2018, October 24). Communities want trees thinned, timber companies want contracts: What's the problem? *Pew Trusts: Stateline*. Retrieved from <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2018/10/24/communities-want-trees-thinned-timber-companies-want-contracts-so-whats-the-problem>
- Raffa, K. F., Aukema, B. H., Bentz, B. J., Carroll, A. L., Hicke, J. A., Turner, M. G., and Romme, W. H. (2008). Cross-scale drivers of natural disturbances prone to anthropogenic amplification: The dynamics of bark beetle eruptions. *Bioscience*, 58(6), 501-517.
- Rainer, G. (2016). Constructing globalized spaces of tourism and leisure: Political ecologies of the Salta Wine Route (NW-Argentina). *Journal of Rural Studies*, 43, 104-117.
- Robbins, P. (2002). Obstacles to a First World political ecology? Looking *near* without looking *up*. *Environment and Planning A*, 34(8), 1509–1513.
- Robbins, P., Meehan, K., Gosnell, H., and Gilbertz, S. J. (2009). Writing the new west: a critical review. *Rural Sociology*, 74(3), 356-382.
- Robbins, P. (2011). *Political ecology: A critical introduction* (2nd edition). West Sussex, UK: John Wiley and Sons.
- Robbins, P. (2012). *Lawn people: How grasses, weeds, and chemicals make us who we are*. Temple University Press.
- Robinson, W. I. (2004). *A theory of global capitalism: Production, class, and state in a transnational world*. Baltimore, MD: JHU Press.
- Rutherford, S. (2007). Green governmentality: Insights and opportunities in the study of nature's rule. *Progress in human geography*, 31(3), 291-307.

- Rutherford, S. (2011). *Governing the wild: Ecotours of power*. Minneapolis, MN: University of Minnesota Press.
- S. 1343 – 101st Congress: Colorado Wilderness Act of 1989.
- Saint Onge, J. M., Hunter, L. M., and Boardman, J. D. (2007). Population growth in high-amenity rural areas: dDoes it bring socioeconomic benefits for long-term residents?. *Social Science Quarterly*, 88(2), 366-381.
- Sayre, N. F. (2011). Commentary: Scale, rent, and symbolic capital: Political economy and emerging rural landscapes. *GeoJournal*, 76(4), 437-439.
- Schlosser, K. L. (2006). US national security discourse and the political construction of the Arctic National Wildlife Refuge. *Society and Natural Resources*, 19(1), 3-18.
- Shell, H. (2015, August 18). CU professor sheds light on pine beetle epidemic. *Sky-Hi News*. Retrieved from <https://www.skyhinews.com/news/cu-professor-sheds-light-on-pine-beetle-epidemic/>
- Sibold, J. S., Veblen, T. T., Chipko, K., Lawson, L., Mathis, E., and Scott, J. (2007). Influences of secondary disturbances on lodgepole pine stand development in Rocky Mountain National Park. *Ecological Applications*, 17(6), 1638-1655.
- Smokey Bear. (10 April 2020). *Prevention how-tos*. Retrieved from <https://www.smokeybear.com/en>.
- Sorenson, C. B., Hayes, S. W., Morgan, T. A., Simmons, E. A., Scudder, M. G., McIver, C. P., and Thompson, M. T. (2016). The Four Corners timber harvest and forest products industry, 2012. *Resour. Bull. RMRS-RB-21*. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Research Station. 62 p., 21.
- Stilgoe, J., Irwin, A., and Jones, K. (2006). *The received wisdom. Opening up expert advice*. London, United Kingdom: Demos.
- Sutor, J. (17 March 2010). Hidden gems proposal aims to create more wildlife friendly places. *Summit Daily*. (19 April 2020). Retrieved from <https://www.summitdaily.com/news/hidden-gems-proposal-aims-to-create-more-wildlife-friendly-places/>

- Tomlinson, I., Potter, C., Bayliss, H. (2015). Managing tree pests and diseases in urban settings: The case of Oak Processionary Moth in London, 2006–2012. *Urban Forestry and Urban Greening*, 14(2), 286–292.
- Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton, NJ: Princeton University Press.
- United States Department of Agriculture (USDA). (2003). *The Healthy Forests Initiative and Healthy Forests Restoration Act Interim Field Guide*. (3 April 2020) Retrieved from <https://www.fs.fed.us/projects/hfi/field-guide/web/page03.php>
- United States Forest Service (USFS). (2011). *Review of the Forest Service Response: The Bark Beetle Outbreak in Northern Colorado and Southern Wyoming*. Rocky Mountain Research Station: United States Forest Service.
- Vaughan, D., and Mackes, K. (2015). Characteristics of Colorado forestry contractors and their role in current forest health issues. *Forest Products Journal*, 65(5), 217-225.
- Vias, A.C., and Carruthers, J.I. (2005). Regional development and land use change in the Rocky Mountain West, 1982-1997. *Growth and Change*, 36(2), 244-272.
- Walker, P. A. (2005). Political ecology: Where is the ecology?. *Progress in Human Geography*, 29(1), 73-82.
- Walker, P., Fortmann, L. (2003). Whose landscape? A political ecology of the ‘exurban’ Sierra. *Cultural geographies*, 10(4), 469–491.
- Walker, P., Hurley, P. (2004). Collaboration derailed: The politics of “community-based” resource management in Nevada County. *Society and Natural Resources*, 17(8), 735–751.
- Watts, M.J. (1983). On the poverty of theory: Natural hazards research in context. In K. Hewitt (Ed.) *Interpretations of Calamity from the Viewpoint of Human Ecology*, (231–262). Boston, MA: Allen and Unwin.
- Wendling, M., Wendling, R. (20 February 2009). Michael J. Wendling and Ruby K. Wendling: Don’t like breck’s new tree ordinance. *Summit Daily*.

Retrieved from <https://www.summitdaily.com/news/michael-j-wendling-and-ruby-k-wendling-dont-like-brecks-new-tree-ordinance/>

Wilkinson, K. (1991). *The community in rural America*. Westport, CT: Greenwood Press.

Winkler, R. (2013). Living on lakes: Segregated communities and inequality in a natural amenity destination. *The Sociological Quarterly*, 54(1), 105-129.

Winkler, R., Field, D., Luloff, A.E., Krannich, R., Williams, T. (2007). Social landscapes of the inter-mountain west: A comparison of “Old West” and “New West” Communities. *Rural Sociology*, 72(3), 478–501.

Wisner, B. (1993). Disaster vulnerability: Scale, power, and daily life. *GeoJournal*, 30(2), 127–140.

Yanow, D., Schwartz-Shea, P. (Eds.), (2006). *Interpretation and Method: Empirical Research and the Interpretive Turn*. Armonk, NY: Routledge.

VITA

Elizabeth Waterbury Prentice was born in Longmont, Colorado in 1988. She attended Benedictine College in Atchison, Kansas where she received her Bachelor's degree in Sociology with a minor in Writing and Journalism in 2010. At Benedictine College she was introduced to ethnographic research and received two grants through the Benedictine College Discovery Day program to visit and study intentional communities throughout the United States, later receiving the Discovery Scholar award for this work.

She received her Masters degree in Sociology from the University of Central Missouri (UCM) in Warrensburg in 2012. There she served as President of UCM's chapter of Alpha Kappa Delta, the international sociological honors society, and received multiple awards from the Missouri Sociological Association and UCM for research and written work. After graduating from UCM she continued to teach undergraduate sociology courses as an adjunct instructor, thrilled every semester by the opportunity to introduce students to the emancipation that is the sociological imagination.

In 2015, eager to join an interdisciplinary and more environmentally focused program, she started her doctoral studies in Rural Sociology at the University of Missouri-Columbia. This work opened many doors related to research, teaching, and writing. These included teaching multiple sections of Rural Sociology and Population and Environment, publishing a chapter of preliminary findings from her dissertation research in a volume of global perspectives on the human dimensions of forest and tree health, and publishing

a piece on the story and politics of the Missouri River in a regional magazine. Her dissertation was concluded in the midst of an epidemic of a different sort, the COVID-19 pandemic, a convergence of stressors she does not recommend.

Today she lives in Columbia with her children, Aldo (5) and Norah (2), her partner, Alex, their dog, and six chickens.