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In the Shadow of the Wolf: Wildlife Conflict and Land Use Politics in the New West

Author
Martin, Jeffrey Vance

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In the Shadow of the Wolf:
Wildlife Conflict and Land Use Politics in the New West

By

Jeffrey Vance Martin

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Committee in charge:

Professor Nathan Sayre, Chair
Associate Professor Jake Kosek
Professor Nancy Lee Peluso
Professor Justin Brashares

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Abstract

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Federal reintroduction of gray wolves (*Canis lupus*) to Yellowstone National Park and Central Idaho in the mid-1990s was widely hailed as one of the great conservation successes of the 20th century, and has become an emblematic touchstone for *rewilding* – an emerging discourse and set of practices for conservation in the Anthropocene. As wolves have grown in number and range, however, so too has socio-political conflict, particularly around predation as threat to livestock production. Reaction appears to far exceed wolves' material impacts, however, and persists 25 years after reintroduction despite development and deployment of compensation measures and coexistence strategies. The wolf is thus also an exemplary instance of *human-wildlife conflict*, an increasingly prominent and intractable concern for megafauna conservation around the world. And while volumes have been written on wolves in Yellowstone, there has been relatively little scholarly attention to Idaho even as it highlights the challenges of shared space across the working landscapes of the American West.

Between 2015 and 2018, I conducted a case study of the Wood River Wolf Project (WRWP), a collaboration between sheep ranchers, environmental organizations, and governmental agencies in Blaine County, Idaho that has pursued wolf-livestock coexistence for over a decade. Grazing thousands of sheep on its project area in the Sawtooth Mountains while boasting the lowest depredation loss rates in the state, the WRWP has garnered international attention as a model of nonlethal management, holding out the possibility of a peaceful end to the wolf wars. Based in ethnographic and archival research and drawing insights from political ecology and critical "more-than-human" geography, I ask what we might learn from this critical case, guided by two overarching questions: First, how can we account for the persistence and seemingly disproportionate intensity of conflict surrounding wolves in the American West? And second, what are the necessary preconditions for and obstacles to scaling up and sustaining collaborative coexistence?

In the included articles, I explore the Project's emergence and practices and how these have evolved over time, as partners have contended with political economic pressures and the delisting of wolves from federal protection and transition to Idaho state management. I highlight the value of qualitative research methods for questions of human-wildlife conflict, and the fundamentally situated and relational quality of risk perception and decision-making. I argue that anti-wolf hostility cannot be read simply as cultural-historical animosity, nor as mere biopolitical concern over an agricultural pest, but rather must be understood amid so-called "New West" transitions and ongoing legal-

political tensions over the governance and use of public lands. This story stresses the inseparability of political economic, cultural-symbolic, and environmental concerns, connecting the wolf question to regional transformations, divergent land use priorities, and contemporary right-wing populism. I show how the political-symbolic enrollment of wolves by different social actors through a cultural politics of wilderness in fact perpetuates polarization and undermines on-the-ground efforts at coexistence between conservation and rural livelihoods – even as I highlight alternative political possibilities around themes of commoning and convivial conservation.

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For my partner, Katrina

***

"*Wolves and people remain cotravelers in American history, and this lingering partnership reminds us humans that our concerns and aspirations exist alongside others.*
People never monopolized the creation of history."

– Jon T. Coleman (2009, p.14)

"*These multispecies relations and circulations are subject to and enrolled in a biopolitical calculus: which bodies and lives are fostered; which bodies and lives are threatening and are therefore `killable'; and what actions are undertaken to manage these bodies and lives. Multiple and more-than-human entities are entangled in the production and enforcement of space and power.*"

– Rosemary-Claire Collard (2012, p.38)

"*In this actual world there is then not much point in counterposing or restating the great abstractions of Man and Nature. We have mixed our labour with the earth, our forces with its forces too deeply to be able to draw back and separate either out. Except that if we mentally draw back, if we go on with the singular abstractions, we are spared the effort of looking, in any active way, at the whole complex of social and natural relationships which is at once our product and our activity.*"

– Raymond Williams (1980, p.83)

Preface

This dissertation is, in many ways, me grappling with my own relationship to American environmentalism – a journey that, off and on, I have been on for much of my life. As a child, my parents took us to Yosemite National Park nearly every summer, where I heard the myths of John Muir and gained an appreciation for the preservation of the wild. At home in the San Francisco Bay Area I visited the California Academy of Sciences as often as I could; it was there that I probably first decided I ought to be a paleontologist (an interest that went beyond the childhood obsession with dinosaurs to picking up texts on evolutionary biology and wildlife ecology). In high school, I helped found and then served as the second president of our school's "environmental club," from which I joined a regional youth network ("Earth Team") and attended workshops and conferences around social and environmental justice – a pattern that would grow into years of activism and organizing during and following my undergraduate degree.

When I eventually turned to the social sciences, my admittedly ambitious motivation was to "do conservation better." I hoped to bring a critical, cross-disciplinary engagement to bear on the environmental challenges of the 21st century – wildlife and habitat loss, environmental conflict, climate change, etc. My undergraduate and graduate education emphasized re-education: challenging the received wisdom and dominant narratives of conservation, training me in the historical, relational analysis of critical geography and political ecology to rethink pillars of American environmentalism like "overpopulation" and the ideology of wilderness.

I first became interested in what I call here the "wolf question" after a conversation many years ago with a friend of my mother's – a college-educated, progressive, environmentally-minded woman who, through the various twists and turns of life, had ended up in Montana raising two small boys and a few sheep. I recall the angry reaction she had at the very mention of wolves, a dramatic and unexpected response given my urban Californian sensibilities, which stuck with me as a sort of puzzle. During my Master's, a term assignment required we investigate a particular environmental policy, and somewhat on a whim I decided to research the U.S. wolf reintroduction – not then realizing that this would be the beginning of a decade-long engagement with wolf issues.

Broadly, my scholarship responds to calls from ecologists and managers for social science attention to the "human dimensions" of environmental issues. Sitting in this space necessitates a committed interdisciplinarity and dedication to cross-cultural communication and collaboration. It requires understanding and incorporating insights from natural scientists and practitioners, and translating critical socio-political analysis into a form comprehensible – and actionable – by others. It is not always easy. I draw on experiences from post-Master's employment in land management – in which I aided federal agencies and private sector partners navigate the at-times arcane rules and complex requirements of environmental regulation. This is supplemented by years of training, organizing, and collaborative scholarship during the PhD, and by the help of a great many colleagues without whom I would have no doubt floundered more than I did.

The dissertation is really only the beginning of this journey, and in the often-heard refrain, "a good dissertation is a done dissertation." This has perhaps never been truer, amid global pandemic and looming crises. There is much here I would change, that I would do differently in hindsight. It is my hope that, in the chapters to follow, I achieve at least some of my aims – demonstrating the value of critical and cross-disciplinary engagement with the historically-rooted, always-political questions of conservation and the wild – and that such lessons as I highlight below might inform further research and engagement with the complex environmental questions of our time.

Acknowledgements

While the dissertation is an exercise in isolation, none of this would have been possible without the communities and individuals that helped me along the way. Research was supported by the UC Berkeley Department of Geography, the Center for Right Wing Studies, Social Science Matrix, the Brechin-Chlebowski Endowment, and the Barbara and Arnold Silverman Graduate Fellowship. Many thanks to my committee – Nathan Sayre, Jake Kosek, Nancy Peluso, and Justin Brashares – as well as those other scholars who helped me think and work through all of this: Rosemary-Claire Collard, Hannah Gosnell, Lynn Huntsinger, Wayne Linklater, David O'Sullivan, Outi Ratamaki, Paul Robbins, and Michael Watts, among others.

Many, many thanks to my informants, hosts, and friends in Idaho and around the West who opened their homes and hearts to me. Special thanks to the Bean Family – Brian, Kathleen, Phoebe, and Fiona; to Sherry and Larry Kraay; Nick Neely and Sarah Bird (and Will Payne for making that wonderful connection); Kelly and Justin Hand; Alice Bynum and family; the Ketchum Community Library staff, especially the Regional History Department – Mary Tyson, Randy Kemp, and Christina Jensen; to the University of Idaho agricultural extension, especially Lauren Golden and Kathy Kimball; to the Wood River Wolf Project staff, particularly Avery Shawler and Greg Hill; and to Rusty Bowman, Stella Capoccia, Gary Farrington, Michael and Priscilla McCool, and Tom Page.

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Appreciation also goes out to my Berkeley Geography cohort (2012!); to my colleagues and friends in the Sayre, Brashares, and Peluso labs who provided abundant critique, encouragement, and fortifying snacks; to my undergraduate assistants, especially Fiona Hannan and Maia Wachtel; and to my comrades and co-founders at Left Coast Political Ecology. Particular thanks to my peers who provided emotional and intellectual support and solidarity on this journey, and the occasional draft read: Liz Carlisle, Jennie Durant, Katie Epstein, Cortney Evans, Morgan Gray, Adam Jadhav (perhaps my biggest cheerleader these past few years), Kelly Kay, Sarah Knuth, Xander Lenc, Juliet Lu, Eve McGlynn, Alex McInturff, Jesse Rodenbiker, Adam Romero, Jennifer Sedell, Shad Small, Gretchen Sneegas, John Stehlin, Alex Tarr, and Brittany Young (with apologies to those forgotten – my mind is a sieve these days).

Scholarship remains the product of embodied existence, and so gratitude is also due for the less intellectual forms of support. Thanks to the crew at Rooz Cafe, especially Ralph Browne and Steve Ranjbin, for giving me a local where I felt at home. Thank you to the voters of California for Proposition 64 (2016), without which I probably would not have made it through the dissertation process. To my *Dungeons & Dragons* groups for letting me take you on a few escapist adventures in the world of Æthos. Thanks also to all my friends, lovers, extended and found families, near and far, who accepted my antisocial behavior (even before the pandemic) and gave a friendly ear, or just a drink, when I needed it. Special thanks to Leonard Chan, Rachel Jacobson, Danielle Watts, Tim Pratt, Heather Shaw, Choo and Jean-marc Genest. In memory, too, of those lost along the way: my

cousin Martin Alexander (I had to finish this for the both of us) and grandmother Pam Smith (I wish she had gotten to read about my take on Hailey, Idaho, where she was raised).

I would not be here without my family – my parents, How Martin and Pam-Anela Messenger, who always believed in me and helped how they could, and Mike, who supported his big brother no matter how strange the journey. Love for my pack of more-than-human co-inhabitants: in memory of Connor and Inky, who got me through my qualifying exams, and to Magnus, my animal companion, research assistant, and all-around good buddy. Most of all, thank you to my partner, Katrina Storey. She has had my back through it all, through stress and crisis and poverty and pandemic. None of this would have been possible without your wit, wisdom, love, and support.

- JVM, August 2020

1. Introduction: In the Shadow of the Wolf

"I saw them at night… green eyes shining in the dark…"
– Brian Bean, rancher and member of the Wood River Wolf Project Steering Committee

Gray wolves (*Canis lupus*) are the largest extant member of the Canidae family. Social, highly adaptable pack hunters, they are apex predators who feed primarily on large ungulates, but also smaller animals, carrion, and – when sharing space with humans – garbage and livestock. Wolves are perhaps the best-known, well-researched, and extensively written-on wildlife species in the world, and have a long and varied history of cultural associations ranging from respect and love to being despised and actively exterminated (Mech & Boitani 2010; Musiani, et al. 2010; Marvin 2012). Historically they have had the largest range of any non-human land mammal, ranging across much of the northern hemisphere. Yet depredation on livestock, competition over wild game, and long-held cultural fears have resulted in a history of persecution and extermination. Following a lengthy campaign to shoot, trap, and poison in the interest of North American colonial expansion and livestock production, wolves had been virtually extirpated from the continental U.S. by the 1930s.

Over the 20th century, however, scientific and cultural re-evaluation of these megafauna predators took place, alongside urbanization and declining economic primacy of livestock production. Gray wolves were among the first species placed on the Endangered Species List in 1974, and, following decades of planning and political back-and-forth, were reintroduced into Yellowstone National Park and Central Idaho in 1995 and 1996 (see Fischer 1995 for a history of the "wolf wars"). Wolf return has been widely hailed as a conservation success (Mech 1995; Randall 2020), as reintroduced individuals and dispersing wolves from Canada reversed federal and private extermination efforts and recolonized landscapes from which they had been absent for decades. Wolves have thus become something of a posterchild for *rewilding*, an emerging discourse and set of practices promoting ecosystem restoration at the landscape scale through the (re)introduction of keystone species (Soulé & Noss 1998; Sandom, et al. 2013; Lorimer, et al. 2015).

Yet as wolves have increased in number and range, socio-political conflict has also returned and grown increasingly forceful and polarized. Wolves are thus also an emblematic instance of *human-wildlife conflict* (HWC), an increasingly prominent and intractable concern for policymakers, managers, and the diverse stakeholders who share space with megafauna species around the world (Woodroffe, et al. 2005; Dickman 2010; Frank, et al. 2019). Anti-wolf sentiments in the American West are largely framed around the threat of depredation on livestock and wild game species, yet social reaction appears to far exceed wolves' material impacts – a *surplus antagonism* (Ortner 2006) that persists 25 years after reintroduction and despite the development and deployment of compensation measures and coexistence strategies.

But this dissertation is not about wolves – not really. I am interested, rather, in the animal *in relation*, in its specific historical and geographical context, as lens onto broader processes and challenges in the region. The title – *In the Shadow of the Wolf* – refers to this orientation, a concern with the wolf's *political presence* much more than its material impacts. While wolves are still something of a rare sight in much of Idaho, they are a near ubiquitous symbol, appearing in popular imagery, political rhetoric, and casual conversation. Yet such discussions frequently slide into other topics, as ranchers and residents connect the wolf to myriad other regional concerns bound up with the so-called "New West." Ongoing controversy thus constitutes a durable, "wicked problem" (Rittel & Webber 1973; see also Mason, et al. 2018) that, I argue, shows anti-wolf hostility to be about much more than historical animosity or an agricultural pest. It also shows the need for an interdisciplinary engagement with the challenges of wildlife conflict and coexistence, and a particular role for the

social sciences in identifying opportunities for conflict transformation (Madden & McQuinn 2014; Harrison & Loring 2020).

Between 2015 and 2017, I conducted an in-depth case of the Wood River Wolf Project (WRWP), a collaboration between sheep ranchers, environmental organizations, and government agencies in Blaine County, Idaho, which has pursued nonlethal coexistence between wolves and livestock for over a decade. Grazing thousands of sheep in its Project Area in the Sawtooth Mountains while boasting the lowest wolf depredation loss rates in the state, the WRWP has gained international attention and been promoted as a model for multi-stakeholder collaboration and HWC minimization. Using qualitative mixed methods grounded in ethnographic and archival modes, and drawing insights from the field of political ecology and a diverse range of social theory – including economic geography, rural sociology, environmental history, and critical animal studies – I evaluated the history and practices of the Project while using wolf conflict as a lens onto regional tensions.

In this dissertation I am concerned with two primary questions. First, what I have termed the *wolf question*: how might we account for the durability and intensity of wolf-related conflict even 25 years after reintroduction? Why the seemingly disproportionate social reaction and political polarization surrounding *Canis lupus* in the Intermountain West? Why is living with wolves such a contentious ask even among those who regularly deal with other megafauna predators and threats to livelihood? And why does conflict persist despite the availability of compensation for losses and preventative deterrents to avoid depredation? Second, what we might call the *praxis of coexistence*: what are the necessary preconditions for fostering relations other than violence with wild co-inhabitants (cf. Greenough 2003, 187), and what obstacles stand in the way of widespread adoption of nonlethal tools and techniques? In an effort to answer these larger questions, I explore how and why the WRWP came to be when and where it did, how its tools and techniques have developed as it has contended with shifting circumstances, and what the major challenges to long-term sustainability and scaling up of its collaborative coexistence model are.

More broadly, I am interested in what theoretical orientations and research methods are adequate to the challenges of conservation in the 21st century. I argue throughout for the value of a critical more-than-human geographical engagement, stressing co-production, inter-relationality, and drawing heavily on insights and approaches from political ecology (PE). From such a perspective, HWC is read through its articulation with political economy and cultural ideas of nature, including narrative-discursive aspects yet inseparable from material processes and pressures (see Moore 1996; Neumann 1998; Hill 2015; Brugger, et al. 2020). I show how anti-wolf antagonism must be understood amid regional socio-economic transformations and ongoing legal-political tensions over the use of public lands, and highlight how the political-symbolic deployment of wolves by different social actors in fact perpetuates polarization and undermines on-the-ground efforts at coexistence.

Many wolf proponents have pushed for *depoliticization*; as some of my informants noted, the aim should be to make wolves "boring," treated and managed like any other wildlife species. In some ways, my point is not dissimilar – indeed I argue below that it is the deployment of wolves within contemporary struggles that has reproduced them as a target for ire and even violence. Yet there is a difference here, too. Coleman and others want to understand wolves on their own terms, "*as wolves* rather than as figments of human imaginations" (2009, 3, emphasis added), and there is certainly value in this – though much of the work of wildlife ecologists covers this supposed gap. In contrast, I propose that our aim should not be to depoliticize wolves – following Robbins and Moore (2013) and the work of PE scholarship broadly, these natures are unavoidably and always already political – but rather to better *understand* that politicization: its origins, trajectories, transformations, and reproduction over time.

Clarifying the forms and drivers of wolf politics, I argue, can help improve our interventions around wolf management and coexistence. As a geographer and social scientist, then, I am thus much less interested in "wolves as wolves" than in wolves as political animals. In the chapters that follow, I hold together PE-informed critical analysis with a normative orientation on applied problem solving and HWC transformation. I hope that my research might help practitioners and policymakers learn lessons from the Wood River Wolf Project, this prominent effort at collaborative coexistence, and inform our efforts as we confront the environmental governance challenges at the nexus of rewilding and land use change, and promote more just and convivial multi-species relatings in the 21st century.

Where/wolves: a critical more-than-human geography of the wolf question

"...the canines paid in blood for their utility as metaphors"
– Jon T. Coleman, *Vicious: Wolves and Men in America* (2009, p.11)

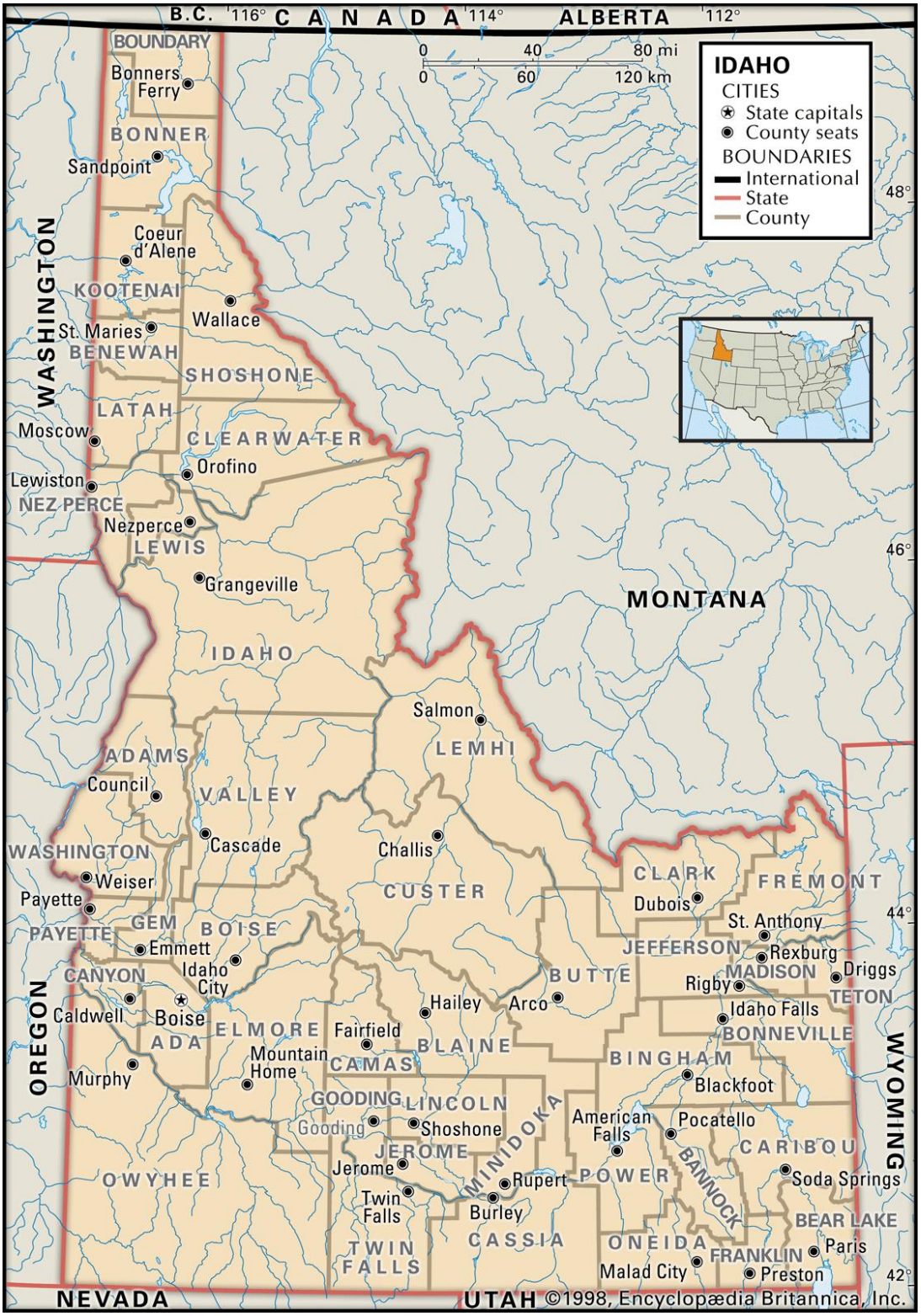
On a cold morning in January 1995, the first reintroduced wolves crossed into Idaho from Canada via moving van. After a blessing ceremony from Nez Perce tribal elders at the border, the canids and their human retinue spent the night under armed guard on the outskirts of Salmon, Idaho (see figure 1, below). The following morning, a caravan of trucks – including US Fish and Wildlife Services law enforcement agents – slowly followed a snowplow to the edge of the Frank Church - River of No Return Wilderness, the largest forested wilderness area in the continental U.S. These four animals would be the first of 35 individuals released into Idaho over the next two years, going on to form packs and raise pups, meeting minimum recovery goals as early as 1999 (Fischer 1995; Bangs & Fritts 1996; ILWOC 2002; Stone 2014). As the population grew in number and range, wolves triggered the processes of endangered species delisting; by 2016 Idaho wolves were fully under state management.[1] Yet gray wolves' extraordinary comeback – hailed as one of the major conservation achievements of the 20th century (Mech 1995) – is only the beginning of the story, as biological success has been outshined by subsequent socio-political and management challenges.

Idaho is home to both the largest percentage of state land under U.S. Forest Service (USFS) management and the largest contiguous federally-managed wilderness outside of Alaska (Our Public Lands, n.d.; USFS, n.d.; 2012). Its rugged and remote landscape, particularly the northern half of the state, provides significant wolf habitat and accounts for its choice as one site of the reintroduction. Yet many of these lands are governed as multiple-use,[2] reflecting federal commitments since the 1970s to managing public lands for increasingly diverse publics and priorities – for conservation, recreation, as well as ongoing resource extraction and livestock grazing (Rowley 1985; Aiken, et al. 2006; Martin, in press A). While volumes have been written on wolves in the Greater Yellowstone Area, Idaho remains relatively understudied, even as it more starkly presents the challenges of shared landscapes, much more akin to those places where wolves continue to expand.

[1] Following a decade of legal back-and-forth, delisting was pushed through via federal budget bill rider in 2011, devolving wolf management to the state of Idaho under a 5-year federal oversight period concluding in 2016.

[2] Per the Multiple-Use Sustained-Yield Act of 1960 (MUSYA) (Public Law 86-517). Note that even dedicated wilderness areas (pet the Wilderness Act of 1964, Public Law 88–577) can have livestock grazing access grandfathered in.

Figure 1: County map of the state of Idaho (MapofUS.org, n.d.)



Both the lead-up to reintroduction and its aftermath were fraught with controversy, as ranchers and right-wing politicians framed wolf return as a top-down federal imposition and a threat to livestock production in the region.[3] The Idaho state legislature went so far as to prohibit the Idaho Department of Fish and Game (IDFG)'s involvement in wolf management until 2003, reversing their policy only in anticipation of delisting from federal endangered species protections. Idaho's 2002 wolf management plan, still the governing document for wolves in the state, includes explicit declarations against wolf presence in Idaho and treats federal *minimum* recovery goals as maximum population targets (ILWOC 2002, 7). Idaho has been home to some of the more extreme anti-wolf discourse in the country, with groups like the Idaho Anti-Wolf Coalition framing wolves as "wildlife terrorists" (AP 2002; Ring 2008). Less inflammatory sentiments are even more common, including the often-repeated narrative that reintroduced "Canadian wolves" are bigger, meaner, and hungrier than those historically present.

At least some of these fears are rooted in real biosecurity concerns, including the threat of livestock depredation on working landscapes (see Buller 2008). Domestic sheep (*Ovis aries*) are particularly vulnerable to depredation, falling prey to wolves in far greater relative numbers than cattle to wolves and other predators. Per section 10(j) of the Endangered Species Act, wolves reintroduced into Idaho and Yellowstone National Park were released as "experimental, nonessential" populations, allowing for greater management flexibility – including lethal control of depredating "problem wolves." Aerial gunning, hunting, trapping, and snaring coordinated between IDFG and USDA APHIS Wildlife Services (WS) have been standard practice in Idaho for years, particularly since the initiation of full state management, in spite of increasing scientific evidence of lethal control's ineffectiveness vis-à-vis demonstrated nonlethal alternatives (Bradley, et al. 2015; Miller, et al. 2016; Treves, et al. 2016; van Eeden, et al. 2018; see also Moore 2020).

Anti-wolf opposition, however, appears to far exceed the material impacts of wolves themselves – especially when compared with other threats to livestock and livelihood, even with other predators (coyotes, for example, are far more damaging for the sheep industry than wolves yet receive nowhere near the amount of public vitriol). Many early fears around wolves was rooted in paranoia and displaced anxieties: wolves were "the bogeyman," to quote one informant, intensely reported on by local media, and ranchers often expressed fear that wolves would bring about the end of their industry. Wolf politics thus appear inseparably material and symbolic, their management a terrain on which struggles over regional transformations are fought and convenient vehicle for proving the "truth" of wolves' monstrosity.

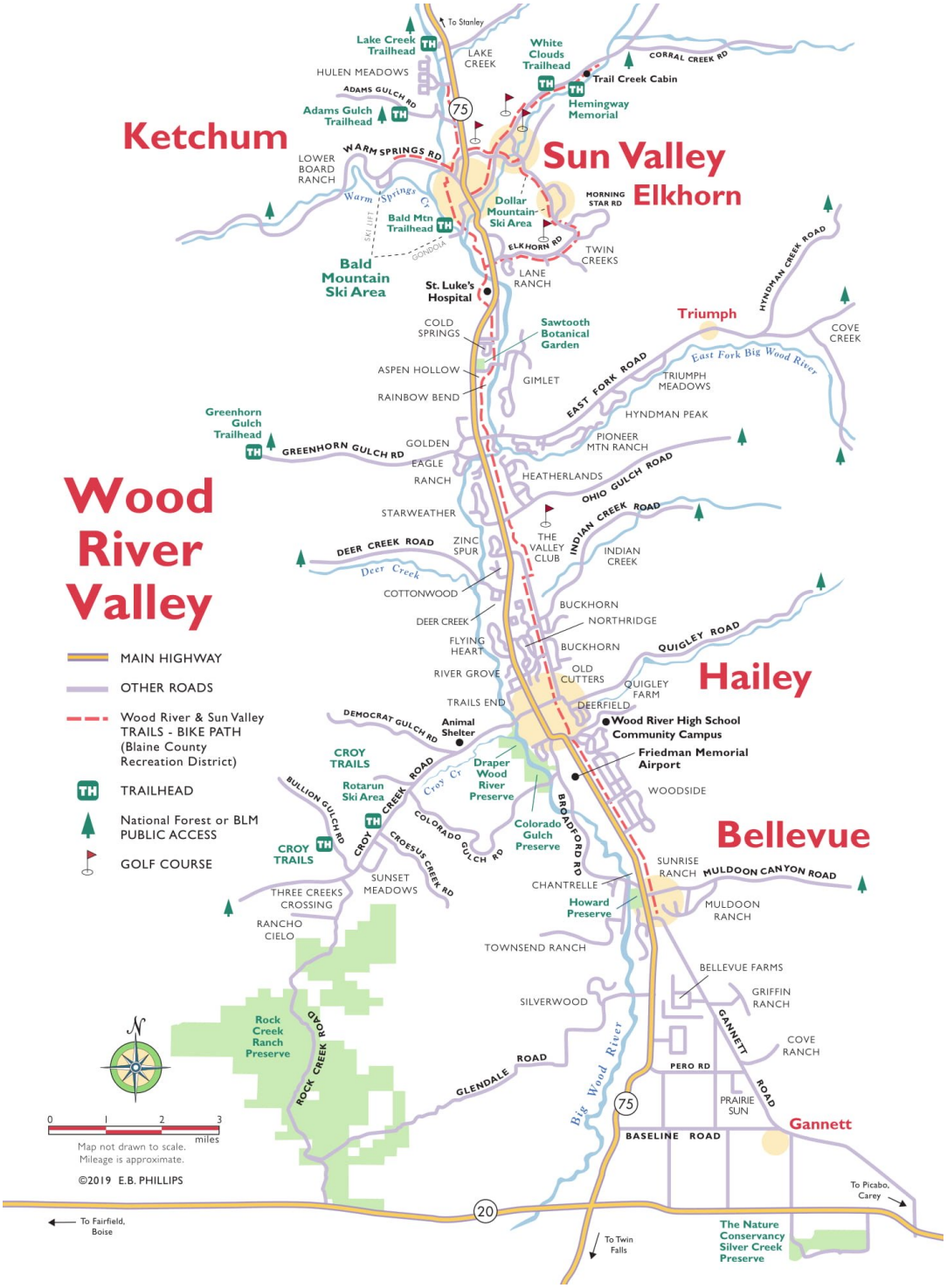
Blaine County as New West crucible

By the end of the 1970s, Idaho was already experiencing significant economic and political diversification. The state had the sixth fastest growth rate in the U.S. from 2000 to 2005 (Aiken, et al. 2006), and in 2018 Boise was the nation's fastest growing city (Sharf 2018; Lim 2020). This fits with patterns from across the region, as economic and demographic shifts over the latter half of the 20th century produced a "New West" of reduced dependency on formerly-dominant extractive industries like ranching, timber, and mining, alongside growth in amenity migration, recreation, service, and high technology sectors (Baden & Snow 1997; Riebsame & Robb 1997; Winkler, et al. 2007; Robbins, et al. 2009). These changes have spawned controversy and anxieties, as growth – the

[3] While big game hunters are another major source of anti-wolf sentiment today, much of earlier opposition and policy was framed around livestock depredation, and hunters' concerns are somewhat beyond the scope of this project.

West grew faster than any other region in the U.S. for each decade of the 20th century (Beyers & Nelson 2000; Hobbs & Stoops 2002) – is unevenly distributed and experienced.

Figure 2: The Wood River Valley Corridor (Visit Sun Valley, n.d.)



Situated between the Sawtooth Mountains in the north and Craters of the Moon and the Snake River to the south, Blaine County is a political outlier in the generally conservative Idaho – often referred to as "an island of blue in a sea of red" – and represents a crucible of New West tensions. The Wood River Valley (see figure 2, above) has long been considered prime "sheep country," with a booming livestock-based economy from the late 1880s through the 1930s (following an earlier lead and silver mining boom that first brought white settlers to the area).[4] With the extension of the Union Pacific Railroad, Ketchum for a time claimed the distinction of shipping more sheep than any other depot in the country (Holland 1998; 10, 131; Stahl 1999). Yet over the century, once-dominant "sheep kings" saw their economic and political power wane, even as a bourgeoning recreation economy began to emerge.

Ketchum and the neighboring Sun Valley Resort (first opened in 1936, sold and expanded in 1968) were positioned as a lower-priced alternative to Aspen, attracting a booming winter sports economy and influx of wealthy amenity migrants, resulting in soaring property values and rising geographic and economic inequality. Blaine County has grown significantly since the late 1980s – with annual population growth approaching 40% by the late 1990s (Holland 1998, 397), and only briefly subsiding following the 2008 economic crash – and increasingly presents as "two worlds": an urban and wealthy north and an agricultural south (Stahl 2000); or, as one resident put it, "you either have three jobs or three houses – nothing in between" (Holland 1998; Aiken, et al. 2006; see also Vanderbilt 2017).

It is out of the New West crucible of Blaine County – and the veritable ecosystem of environmental non-governmental organizations (ENGOs) in the Wood River Valley – that the Wood River Wolf Project emerged. In 2007, dispersing wolves formed a pack in the Sawtooth National Recreation Area, just north of the Wood River Valley and right in the middle of the state's "sheep superhighway" (Blaine County retains some of the highest remaining concentrations of sheep on public lands in the state). The Phantom Hill Pack, as it became known (see figure 3), killed nine sheep and a guard dog when a band (a group of sheep) was grazed too near their den site. Representatives from Defenders of Wildlife, a national environmental nonprofit that had been closely involved with wolf reintroduction and compensation measures since, met with local ranchers, IDFG, and USFS agents, and received approval to use this opportunity to test nonlethal methods to avoid further depredation. After a successful first field test, the Blaine County Commission voted to contribute seed money to what was founded as the Wood River Wolf Project in 2008.

Since then, out of its offices in Hailey and over more than a thousand square miles of western range, the WRWP has demonstrated the effectiveness and feasibility of nonlethal management tools and techniques for preventing depredation of wolves on sheep and reducing the need for lethal control (see Wilkinson et al 2020). Many of the strategies developed by the WRWP have emerged as best practices, increasingly adopted across the region, while the Project's "test case" boasts the lowest loss rates in the state, garnering it international attention as a model of human-wildlife conflict minimization (Stone, et al. 2017; see chapter 3 for further detail). Against the claims of more extreme ranchers and environmentalists – and even skeptics among prominent wolf biologists – the

[4] The history of indigenous presence in – and violent expulsion from – this area is an important one, though underexplored in this dissertation. Idaho is site to some of the last of the Indian Wars, including the Nez Perce War of 1877 and the Bannock War of 1878, with ongoing claims of access and use around the Camas Prairie and other locations visited during my fieldwork. As noted below, the Nez Perce in particular have played an important role in wolf management in Idaho. Despite previous research experience with tribal resource issues in other regions, access in Idaho was a challenge – though I hope to return to some of these concerns in future research and publications.

WRWP has shown coexistence to be materially possible, even as policy and economic obstacles have hindered the expansion of its approach to other sites. There is thus value in exploring the Projects origins, its development over time, and in clarifying the challenges it has faced, so that others might learn the lessons of this critical case as they confront similar challenges elsewhere.

Figure 3: The Phantom Hill Pack, just north of Highway 75

(Photo courtesy of Robin Garwood and the Sawtooth National Recreation Area.)

Wolves are but one instance of a range of complex socio-environmental challenges, often interconnected, currently on a low boil in the American West. A portion of my research took place simultaneously with and only about 300 miles east of the occupation of the Malheur Wildlife Refuge in southeastern Oregon, the militant takeover headed by Ammon Bundy that grabbed headlines in early 2016 (Levin 2016; Tracey 2017; Walker 2018). While ranchers I spoke with generally denounced the action (at least publicly), there was often an undercurrent of sympathy with the Hammonds (the ranchers whose trial kicked off the issue), or at least with the broader question of public lands grazing.

Debate over the governance of public lands the American West goes back over a century, a history punctuated with conflict – from settler colonialism to range wars and sagebrush rebellions (Hays 1959; Brick & Cawley 1996; McCarthy 2002). In these struggles, material concerns over land access and use articulate with rural populism, anti-federalism, and the interests of extractive capital (Prudham 2005; Skillen 2020), and become fuel for a political strategy of resentment and anger, of

emboldened right-wing militants and white supremacists.[5] These dynamics extend beyond the region, as well, to national politics and as part of an international rise in reactionary populism (McCarthy 2002; 2019; Berlet & Sunshine 2019).

The wolf question serves as a flashpoint for anxieties and anger around regional transformations. Questions of land and governance, livelihood and belonging, culture wars and regional futures thus all weave throughout my research. Wolf issues provide a valuable lens onto a broader set of global environmental challenges, as well: of human-wildlife conflict, rewilding, and land use change, of rural political economy and conservation in the Anthropocene. How might we navigate a rewilded world, living together and sharing space with other species, particularly those who challenge human practices and conceptualizations in both material and cultural-symbolic ways? What would be necessary to encourage acceptance of predator conservation among those most directly affected? How do concerns over predators articulate with rural politics and places, and what sorts of politics, policies, and understandings are necessary to address local concerns and facilitate coexistence?

A political ecology of human-wildlife conflict: toward convivial conservation

> *"There is something to be said for declaring a truce on the more abstract structural differences in interpretation of social change, however important these differences may be, if it allows cross-fertilization of approaches."*
> – Piers Blaikie and Harold Brookfield, *Land Degradation and Society* (1987, p.24)

Human-wildlife conflict (HWC) has emerged globally as a critical threat for many species – particularly megafauna predators like wolves – and is one of the most widespread and intractable challenges facing conservation biologists and managers today (Treves & Karanth 2003; Dickman 2010). The combination of ecological importance (large predators are generally keystone species with disproportionate effects on their environment) and increasing frequency of interaction (as development expands into predators' territories and predators reestablish themselves in former habitats) makes for a perfect storm of pressing management need. Yet social opposition does not follow "rational" assumptions around risk perception or proportionality of response, further highlighting the importance of attending to the extra-ecological, socio-political landscape. Scholarship around human-wildlife conflict has thus increasingly called for social science attention to the "human dimensions" of these issues, mirroring patterns in environmental science and management more broadly (Mascia, et al. 2003; Woodroffe, et al. 2005; Redpath, et al. 2013; Bennett, et al. 2016; Frank, et al. 2019).

What it means to apply social science to HWC is, however, an open question. For ecologists and practitioners, it has often meant turning to political science, psychology, and neoclassical economics, and relying on attitudinal surveys and statistical analysis, rather than investigating complex local histories and political economic drivers. While there is increasing recognition of the need for social science insights around these issues, particularly since reintroduction, even the best wolf scholarship often underplays power inequities and structural factors in favor of policy analysis and abstract "cultural values" (e.g. Nie 2003; Clark, et al. 2005; cf. Margulies & Karanth 2018; Mason, et al. 2018). And although there is much written on wolves (indeed, wolf issues are often referenced as an emblematic instance of HWC), there remains a dearth of research on Idaho specifically (despite it being one of the two reintroduction sites in the region, and with working landscape questions much more relevant to the coexistence challenges than the park landscape of Yellowstone), as well as a need for a critical unpacking of which "human dimensions" are most relevant to the challenges at

[5] Notably so in the Idaho panhandle region (see Petersen 2017).

hand. In contrast with colleagues with whom I have written (Wilkinson, et al. 2020; see also Kobilinsky 2020), I would argue the wolf question highlights the need to consider *far more* than ecology, including the co-production and complex interplay of social, political, economic along with ecological processes – an interdisciplinary engagement ripe for further geographical and political ecological engagement (Neumann 1998; Adams & Hutton 2007; Margulies & Karanth 2018).

Political ecology (PE) is a theoretical framework that emerged in the 1970s and 1980s at the intersection of human geography, cultural anthropology, and environmental history, drawing on a diverse tradition of critical social science to better understand the power relations pervasive in the management, allocation, and distribution of natural resources in the developing world (Blaikie & Brookfield 1987; Robbins 2004; Neumann 2005; Perreault, et al. 2015). Research coalesced around a commitment to the empirical case study, emphasizing historical change, the co-production and interrelationship of the social and the environmental, and a focus on the "resource user" as well as multi-scalar chains of explanation. PE analysis thus emphasizes "the constantly shifting dialectic between society and land-based resources," united by a concern with how power relations and a "broadly defined political economy" shape land and resource access and management (Blaikie & Brookfield 1987, 17), as well as an uncompromisingly critical approach vis-à-vis dominant "apolitical" eco-scarcity and modernization narratives while normatively seeking and promoting alternatives (Robbins 2004).

PE has become a prominent framework in geographical study of human-environmental relations, an eclectic "big tent" that draws and "cross-pollinates" across diverse genealogies (Wesner, et al. 2019). In chapter 2 I explore some of the history of how PE made the "journey home" to study the developed world, particularly through scholarship on the American West (see Fortmann 1996; Robbins 2002; McCarthy 2002). Subsequent chapters each engage different bodies of literature and debates within this big tent, each serving as windows onto different aspects of the wolf question. I draw particularly on scholarship around "people and parks" (e.g. West, et al. 2006; Adams & Hutton 2007), as well as earlier literature on moral economy (Polanyi 1944; Thompson 1975; Scott 1976; see also Jacoby 2003), reading these together with critiques of wilderness ideology (Guha 1989; Cronon 1995; Neumann 1998), eco-Marxian analyses of enclosure and human-environment relationships (Williams 1980; Smith 1984; Harvey 1996; see Kelly 2011), and infusing them with more insights from animal geographies, science and technology studies, and critical physical geography (e.g. Philo & Wilbert 2000; Lave, et al. 2018) – all with the aim of developing a set of analytical tools adequate to the questions raised above.

Contending with its greatest challenges yet – climate change, a sixth mass extinction, and the existential questions of the Anthropocene – conservation in the 21st century is at a crossroads. Between a "new conservation" that embraces the hybrid "rambunctious garden" (Marris 2011) but leaves untroubled the political economic systems that got us here, and a neo-protectionism that promotes a "half-earth" strategy of protected area expansion (Wilson 2016), some have argued for alternatives. Proposals like Gavin, et al.'s "biocultural approaches" (2018), or, more recently, Büscher and Fletcher's "convivial conservation" (2019; 2020), echo PE's earlier positioning against both market-based and top-down coercive "solutions" to environmental challenges (Robbins 2004), seeking a way forward beyond this false choice (a question I return to in chapter 6).

A political ecology of the wolf question approaches it as a complex, more-than-human assemblage of relations, reading rewilding and HWC together with regional transformations and socio-political struggles over land use and possible futures. The aim cannot be to simply tack on "human dimensions," but rather to recognize these challenges as social all the way down, inextricably political, produced through the complex relatings of human and non-human actants

(Robbins & Moore 2013; see also Latour 2005; 2012). In the chapters that follow, I explore how wolves are made a battleground for social concerns far beyond but inseparable from the animals themselves, deployed in deeply-rooted conflicts over public lands use, federal management, and the political economic future of the West. I show how contrary policy and insufficient material support makes coexistence the exception rather than the rule (with parallels to agroecological insights on the structural obstacles to sustainability transitions), and that coexistence requires collaboration and trust rather than the litigation and oppositional methods predominant among many ENGOs. The use of wildlife as a tool of exclusion sets animals up as targets of ire and provides fuel for right-wing reaction. This nexus – of wolves, sheep, lands, and people – thus provides a valuable lens onto more-than-human geographical questions of land use, sustainability, and convivial futures.

Methods

Between 2015 and 2017, I conducted multiple research trips to Blaine County, Idaho and the surrounding region – including extended summer field seasons in both 2016 and 2017 – for a total of nine months over the three years. During these trips I was based in a handful of locales: living in a yurt a few miles outside the town of Carey on the home ranch of Lava Lake Land & Livestock, in a trailer on a small organic farm outside Bellevue, later renting a room in a house in Bellevue proper, along with couch surfing, Airbnb'ing, and relying on the hospitality and generosity of friends across Idaho and the intermountain West. Over this period I conducted a case study of the Wood River Wolf Project and its partners, using qualitative mixed methods grounded in ethnographic and archival modes to explore the WRWP's emergence, development, and practices, as well the broader context and history of Idaho wolf recovery and post-delisting management. Research consisted of participant observation around livestock and environmental organization activities, semi-structured interviews with a range of stakeholders, and investigation of local and state archives.

Participant observation included site visits, active contributions to a range of stakeholder activities, and ethnographic observation – or "deep hanging out" – as I experienced the communities of the Wood River Valley and broader region. I visited livestock industry-related sites – ranches, rangelands, processors, and meetings – and contributed to sheep trailing, shipping, as well as multiple 4-H events in Blaine County. I was deeply involved in WRWP activities, attending seasonal kickoff meetings of the larger collaborator network as well as weekly organizational meetings with core coordinators in the Hailey office. I also contributed to on-the-ground Project work, visiting and delivering equipment to herders and staff on the range, and helping conduct howl surveys in the Idaho backcountry and community outreach at local farmers markets. I attended several other governmental and ENGO meetings, workshops, and conferences throughout the region as well, all of which helped to build a sense of the relationships, dynamics, and discourse around issues of wolves, livestock, and western lands.

Alongside these visits, I conducted over 40 semi-structured interviews with Project partners and other relevant stakeholders, complemented by informal conversations in the wider community. Interviews were held in person where possible, via phone when necessary, and varied from 45 minutes to over three hours (once they got to talking, ranchers could go for some time). Discussions were recorded when possible and agreed to (all interviewees received informed consent briefings), and emphasized individuals' practices, experiences, and understandings. Interviewees included ranchers (primarily but not exclusively sheep producers) and other livestock-industry stakeholders, ENGO representatives, public officials and employees across departments (county, state, and federal levels), as well as other community members with insight into the dynamics of wolf-livestock conflict and regional history.

These contemporary insights were supplemented by historical investigations in collaboration with local and regional archives. The Idaho State Archives and Research Center in Boise included historical records and publications of the Idaho Department of Fish and Game, while the Regional History Department of the Community Library in Ketchum provided local news clippings, maps, photographs, and rare volumes on regional history, as well as oral history recordings and transcripts dating back to the early 20th century (of particular value were interviews organized and conducted by Miriam Breckenridge around the history of sheep production in the region). I additionally reviewed agency and organizational publications and communications as well as journalistic accounts, many of which were available online, to provide a fuller view of the shifting historical and policy context.

Collectively, these methods help me to answer the questions raised above: How can we account for the persistence and intensity of wolf conflict 25 years after reintroduction? What is necessary to better foster coexistence, and what obstacles stand in the way? And which methods and "human dimensions" concerns are adequate to the challenges of conservation in the 21st century? Although barriers to the "meaningful integration" of the social sciences into the theory and practices of conservation remain, including the challenge of the "two cultures problem" (Adams 2007; Bennett, et al. 2016), it is my hope that ecologists and practitioners might yet find value in this qualitative study (see Sayre 2004). Data from my investigations emphasizes the geographical context and historical conjuncture out of which the WRWP emerged – highlighting some important preconditions to collaboration – as well as the broader set of relations these coexistence efforts contend with. I highlight situated practices and experiences, actors' understandings and discourse, and the complex co-production and co-mingling of the political, economic, cultural, and ecological – holding together the material and meaningful aspects of the wolf question with the aim of identifying openings for transformation.

Outline of the dissertation

> *"Only the mountain has lived long enough to listen objectively to the howl of a wolf."*
> – Aldo Leopold, "Thinking Like a Mountain," *A Sand County Almanac* (1949)

As I write this introduction, we are months into a global pandemic, living in the shadow of looming and interconnected political economic and ecological crises. It is hard not to have the work I do here feel a little trivial, with my focus on writing insignificant amid these historical events. Yet as I shelter-in-place in Oakland, California, Blaine County is also suffering from COVID-19, with nearly a quarter of its residents exposed due to its position as a regional tourism hub (Ames 2020; Buitrago 2020). Cases continue to surge in Idaho, worsened by right-wing "liberty rebellions" – with Ammon Bundy once again in the spotlight – and public officials defying health restrictions (Baker 2020; Kauffman 2020; Siegler 2020). In the midst of writing up my findings on the wolf question, it is difficult not to connect these patterns to those observed in my research, with COVID-19, like the wolf, a more-than-human lens onto a suite of complex regional dynamics. Idaho once again appears to be turning what ought to be a relatively simple biosecurity question into one of power, politics, and culture war, with real costs for those on the ground.

The subsequent chapters have each been published or accepted for publication as academic journal articles (chapters 2, 3, and 4), or are intended for submission as such (chapter 5, and to a lesser extent chapter 6). Each of these pieces speaks to a different audience (appropriate given the necessarily interdisciplinary nature of the project), each highlighting different histories, literatures, and debates (in part accounting for the relatively brief treatment above). Following Leopold, there is no "objective" understanding to be had of the wolf question, yet in approaching the issues through each of the "windows" that follow (cf. Ollman 1976; Harvey 2007), I hope to give some sense of its

relational complexity, historical production, and identify at least a few previously underappreciated aspects. Broadly, the chapters tell a story of the Wood River Wolf Project, unpacking the situated practices and structural pressures faced by the collaborative and its partners to better account for its successes as well as the challenges faced over the past decade, with an eye toward future coexistence. The WRWP and Blaine County provide a critical case for considering the politics of rewilding, human-wildlife conflict, and regional transformation, representing a crucible of the New West and the complexities of conservation and land use politics in the 21st century.

In chapter 2, previously published in *Geoforum* as a critical review (Martin, et al. 2019), my coauthors and I argue for the enduring value of a political ecology engagement with the American West. This piece revisits the groundswell of political ecology scholarship on the region from the 1990s and 2000s before turning to the current moment, when myriad and intertwined socio-environmental challenges warrant a renewed engagement. We suggest that PE in the West might be revitalized by once again infusing the "big tent" with insights from more recent scholarship and through its application in the region itself, where the challenges of the West provide ample ground for experimentation and learning. We conclude with a call for further conversation and collaboration, building not only our scholarship but our scholarly community. I thus include this piece also as an intentional acknowledgement of the importance of collaboration and collectivity in my research, writing, and the PhD itself.

The following chapter, accepted for publication in *Conservation Science and Practice* as part of a special section on human-wildlife conflict and coexistence in agricultural landscapes (Martin, in press B), presents an overview of the WRWP – its emergence, practices, and development over time – and identifies three main challenges for the Project's long-term sustainability and scaling up its collaborative coexistence model (these three themes also inform the questions explored in the subsequent chapters). Written for an audience of wildlife ecologists and practitioners, this piece spends time arguing for the value of the case study and qualitative methods in considering HWC, a central contribution of my work generally amid ongoing debates over what social science and "human dimensions" ought to include when we study, analyze, and make policy around complex socio-environmental challenges. In this context, I argue for the lessons to be learned from the WRWP as a critical case study, based in its longevity, the context of its efforts amid socio-political opposition in Idaho, and its contributions to the development of nonlethal best practices and a praxis of adaptive, collaborative governance.

Having established some of the empirics of the WRWP, chapter 4 – accepted for publication in *Geoforum* as part of a special issue on uncertainty (Martin, in press A) – moves to explore the practices of government agents, specifically those with the Idaho Department of Fish and Game and the U.S. Forest Service, around wolf management and public lands grazing. I aim to unpack the puzzle of why actors appear to collect less or less precise data on their charges with consequent challenges for management and decision-making. Building from a political ecology concern with situated practice, and a tradition from science and technology studies of following scientists and managers in their work, I read the efforts of these agents through the conceit of Scylla and Charybdis from *The Odyssey* – sailors keeping their ship sailing while attempting to avoid a great obstacle on each side. I use the concept of "illegibility," drawing on the work of James Scott (1998) and more recent literature around the sociology of ignorance (McGoey 2007; 2012a; b; Proctor & Schiebinger 2008; Kleinman & Suryanarayanan 2012) to consider the rationality of the seemingly irrational, grappling with the dysfunctionality of environmental governance in the West while speaking to broader questions of knowledge, power, and politics.

In chapter 5 I return to the "wolf question" introduced above: how do we account for the seeming disproportionality and durability of anti-wolf sentiment in the region 25 years after reintroduction? Why are wolves a target of such ire and political polarization? In tackling this question, I deploy a critical geographical approach informed by insights from political ecology, particularly scholarship around "people and parks" and moral economy, along with animal geography and critical environmental history. I propose an analysis of wolf conflict's overdetermination that situates it within regional transformations and environmental politics, looking to how anti-wolf attitudes articulate with pressures and anxieties associated with New West rural gentrification, and reading wolf conflict through a longer history of legal-political struggles over public lands. Focusing on environmental organizations' deployment of wildlife in campaigns to remake land use relations, we see how wolves become a target for social reaction – in turn highlighting the need for an alternative environmental politics in the interest of coexistence.

Concluding the dissertation, I review some of the key take-aways of these disparate engagements. Nonlethal coexistence, demonstrated by the WRWP through over a decade of effort, is feasible yet faces challenges that extend beyond the functionality of its tools and techniques. These include the material costs of conservation, the perverse effects of contrary policy, and the challenge of political alternatives as the wolf acts as a terrain for broader struggles over land use and regional futures. Moving away from wolves, I proceed to trace a few key moments in American environmentalism, from John Muir's wilderness ethic to Garret Hardin's tragedy of the commons, building toward the value of a commoning framework as alternative to both the dominant framings of regional environmentalism and right-wing reaction and as supplement to on-the-ground "radical center" efforts. Commoning, I argue, presents a positive vision that speaks to local's concerns, promotes a land ethic-minded conservation, and clarifies the political economic challenges faced – holding out the promise of a conviviality that does not counterpose the wild and the human, but rather promotes mutual flourishing.

2. Revisiting and Revitalizing

"What are we to make of the current outbreak of weirdness in the West?"
– Richard White, "The Current Weirdness in the West" (1997)

The following article (Martin, et al. 2019),[6] originally published in *Geoforum* in 2019, presents a critical review and brief reflection on the 1990s and 2000s groundswell of political ecology (PE) scholarship focusing on the American West – a set of conversations that included many of the co-authors' advisors' work and scholarship that informed our own research directions. This piece comes out of a panel session held at the annual meeting of the American Association of Geographers (AAG) in 2018, entitled "Political Ecology of the American West: A New Generation." That session, in turn, emerged from several years of study groups and conversations, including a reading group around western issues organized at UC Berkeley in 2016 and 2017. At the AAG meeting, my co-panelists (later co-authors) and I spoke on our respective investigations, the enduring value of a broadly-construed PE approach in the region, and the importance of building connections, conversations, and support among early career scholars working on these issues across our multiple institutions. The attention our session garnered – the conference room, although small, was overflowing – indicated a value in continuing these conversations.

We first conceived of our intervention in conversation with Robbins, et al.'s engagement with the "New West" (2009), reflecting on how the region had evolved in the decade since that piece. We agreed with Robbins, et al. in viewing the West not as *exceptional* (an outlier from broader national and international patterns) but rather in *relation* (cf. Cronon 1992), and as a productive site for considering broader processes and global challenges. At the end of the 20th century, the "wicked problems" of this region (Rittel & Weber 1973) – concerns over land, resources, identity, and governance, often unavoidably social *and* environmental – had engendered diverse interdisciplinary engagements. In the first decades of the 21st, with growing rural populism and regional anxieties over political economic and environmental futures, regional challenges – and the need for a deep, critical engagement from PE – appeared ever more pressing.

A theoretical perspective originally conceived to better understand the power relations pervasive in the management, allocation, and distribution of natural resources in the developing world, PE's "intellectual journey home" (Fortmann 1996, 545) implied *commonalities* between sites and dynamics considered by earlier PE scholarship, largely in the developing world, and the questions of the developed world – particularly, it seemed, in the American West (e.g. McCarthy 2002; Walker 2003). Here we further emphasize the need to continue to build on and improve the PE toolkit, through "cross-pollination" across diverse genealogies (see also Wesner, et al. 2019), and through deployment in place, with the West conceptualized as a analytically valuable nexus of the socio-environmental challenges of 21st century. In other words, the West (still) has much to gain from PE, and PE also has much to gain from the West.

The article is structured around three long-standing regional issues – resource extraction, wildlife conflict, and cross-boundary governance – which, we argue, benefit from an engagement that brings insights from "classic" PE together with an expanded toolkit of new perspectives, epistemologies, and ontologies. While by no means exhaustive – indeed, in the last section we flag the many historical blind spots and exclusions of our field, and the need for different voices and other stories – it is our hope that this piece serves as a launching point for further conversation and collaboration, extending and deepening our engagement with a region so many of us consider home. (Indeed,

[6] Chapter text is reproduced here with permission of all co-authors (see appendices).

these efforts have already begun to bear fruit: colleagues and I built on interest in this piece and subsequent conversations to help build our AAG 2020 session around "Commoning in Rural North America.")

Section three, "Contested Belonging and the Wolf Question," draws on my case study in Blaine County to frame wolf conflict as one of different conceptualizations of and claims to place, challenging ideas of wilderness and restoration bound up with wolf return and emphasizing the embeddedness of wolf issues amid regional political economic and socio-cultural transformations. Such moves – along with themes of reconciliation and convivial conservation (cf. Büscher & Fletcher 2019) – run throughout my research and subsequent chapters. This piece thus serves as a pseudo-methods chapter and motivates the dissertation's broader engagement: introducing the need for and value of a political ecology of the wolf question.

In the context of the dissertation, inclusion of this piece serves as a methodological intervention around the theme of *collaboration*. The dynamics of the West continue to raise questions of participatory and collaborative management, often discussed in terms of a pragmatic "radical center" or "radical middle" (Charnley, et al. 2014; LeMenager & Weisiger 2019), and both this article and subsequent chapters explore the obstacles to and promise of collaborative governance. More important, perhaps, is the role of collaboration in our own efforts as scholars. Ethnography is only possible through relational engagement with our informants – an insight that leads to more complex questions of co-authorship and credit. Despite the single name on the cover of the dissertation, processes of research and writing are *always* social. Including this piece thus serves as a stand-in for the many, many instances throughout the PhD – of thinking, organizing, and writing together (e.g. Wesner, et al. (2019); Wilkinson, et al. (2020); Martin & Sneegas (2020)), and of material and emotional support, crucial though much more difficult to cite – that made the journey possible.

Revisiting and revitalizing political ecology in the American West

Jeff Vance Martin, Kathleen Epstein, Nicolas Bergmann, Adrianne C. Kroepsch, Hannah Gosnell, and Paul Robbins. 2019. *Geoforum*, June. https://doi.org/10.1016/j.geoforum.2019.05.006.

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1. Political ecology in the West: the next generation?

Typified by tensions over land and resources, identity and belonging, autonomy and authority, the American West has long been theater to novel and dramatic couplings of the political and ecological. The challenges of theorizing and living in this region inspired a groundswell of research from the field of political ecology in the 1990s and early 2000s (e.g. McCarthy 2002; Walker 2003). Today, the dynamics that inspired political ecology to make the "intellectual journey home" persist (Fortmann 1996, 545), but with heightened stakes and complexity. Unconventional forms of energy development eat away at agricultural land and wildlife habitat, exacerbating the longstanding challenges of multiple use in patchwork landscapes. Unprecedented wildfire seasons and flooding – driven in part by climate change – threaten public health, lives, and property as well as governance models confounded by transboundary ecological processes. Unexpected outcry – from the armed takeover of the Malheur Wildlife Refuge in 2016 to protests at Portland ICE headquarters in 2018 – highlight the perennial question of who and what belongs in the West, as well as contemporary articulations with populist revolt and regional anxieties over economic and environmental futures.

Since first touching down in the region, political ecology itself has evolved and expanded from its historical materialist roots to incorporate insights from multiple genealogies. Poststructural insights from feminist and postcolonial scholarship have troubled the nature and production of knowledge (e.g. Whatmore 2002), but so too has engagement with physical science through STS and, more recently, critical physical geography (Lave, et al. 2014). As emerging scholars (aided here by our more senior counterparts), we find ourselves drawing insight from both the long arc of critical human-environment scholarship and the theoretical frontiers of political ecology and its "fellow travelers." We argue here for both the enduring utility and potential contributions of political ecology's growing "big tent" for engaging this region – now an important stage for national- and international-level debates and whose puzzling questions are more urgent than ever (cf. White 1997; Schroeder, et al. 2006; Robbins, et al. 2009).

Below, we revisit three longstanding regional issues and demonstrate the value of combining classic insights with the expanded toolkit of political ecology today – showing what the West has to gain from these insights, and how the region provides fertile empirical fertile ground for generating theory through bringing together diverse lineages. More broadly, we hope to inspire others to join us: in revisiting and revitalizing a previous generation's insights, connecting up contemporary and emerging work, and relaunching a collective academic effort around critical scholarship in a place so many of us call home.

2. Unconventional extractivism, uneven re/development

Despite energy development's long history in the American West, the recent surge of unconventional oil and natural gas extraction has been both dramatic and unexpected, resulting from a combination of high commodity prices, energy geopolitics, and the technological pairing of horizontal drilling with hydraulic fracturing (a.k.a. "fracking"). Similarly unexpected has been the related deepening and broadening of the West's extractive terrain, including so-called "impact geographies" ranging from remote boomtowns and tribal sovereign lands to oilfield borderlands and petro-suburbs (Haggerty, et al. 2018). While extraction has historically been associated with

geographical frontiers and core-periphery relations, the proliferation of new patterns requires reconsideration of the spatial relations of resource geographies (Lave & Lutz 2014). Applying a political ecology lens to processes of unconventional extraction helps us understand evolving energy geographies, their political economic drivers, and their socio-ecologically uneven impacts in the West and beyond (Bebbington 2012).

Colorado's Front Range is home to many of the Western municipalities bewildered by the recent meeting of fossil fuel extraction and rapidly sprawling (sub)urban environs. The "Lords of Yesterday" perhaps never fathomed such overlapping land uses (Wilkinson 1992), or that energy companies would use western suburbs to test a new business model: the stitching together of thousands of small mineral leases in order to drill within residential spaces historically distanced from oil production (Kroepsch 2018). Advocates argue that the Denver-Julesburg Basin's hydrocarbon-laden geologic deposits predated surface developments, while opponents critique the mixing of industrial hazards with homes, schools, and vulnerable populations (Kroepsch 2016). The primary policy response in Colorado has been to (re)establish a more customary setback distance via agency rulemaking, legislation, and ballot referendums. Efforts to govern contentious extractive activities through simple spatial strategies, however, leave unresolved deeper conflicts over power, jurisdiction, and procedural fairness.

Critical scholarship has long sought to trouble the urban-rural binary (e.g. Cronon 1992), but the new range of energy impact geographies and spatial politics – across urban, rural, and sub- or exurban in-between zones – necessitates reconsideration of co-constitution and interconnectivity. Combining insights – from assemblage and network theories (Haarstad & Wanvik 2017), new materialism (Bakker & Bridge 2006), and critical physical geography (Lave, et al. 2014), together with tools from the political economic geography of resource extraction (Huber 2009) – yields an array of new research directions focusing on the uneven patterns of (sub)surface development. These new directions acknowledge how human interventions transgress traditional boundaries, linking distant places and people and driving experiments both above and below the ground. Such an approach suggests thinking about space vertically as well as relationally, with a political ecological – or, perhaps, political geological (Bobbette & Donovan 2019) – engagement of the subsurface.

3. Contested belonging and the wolf question

Contestation surrounding the reintroduction and return of gray wolves to the Northern Rocky Mountains since the mid-1990s epitomizes the material and symbolic challenges of multiple-use governance. Tensions between rewilding and heritage landscapes – questions of who and what belongs, and related narratives of identity and place – rest on dubious claims of prior occupation, appropriate baselines, and unresolved debates over land use and environmental impacts in the region (cf. Soulé & Noss 1998; Drenthen 2018a; b). Although the wolf question is often conceptualized as part of a contested transition from "Old" to "New West" (Nie 2003; Clark, et al. 2005), this fails to account for patterns and persistence of conflict in the more than two decades since reintroduction. Political ecology's strength in challenging problematic narratives and disentangling complex histories can help lay the groundwork for alternative conceptualizations of belonging and socioecological futures (Huntsinger 2016).

Blaine County, Idaho, between the Sawtooth Mountains and Craters of the Moon, is an important site for cultural and legal battles over wildlife, livestock, and public lands. Decades-long efforts around wolf coexistence and collaborative range management share space with litigious anti-grazing environmental NGOs, making the Wood River Valley an important crucible of "New West" tensions (cf. Rowley 1985; Walker 2018). Unpacking this history complicates an "old-timers" versus

"newcomers" framing, highlighting instead layered and at times oppositional land uses and claims to territory. From indigenous expulsion through extractive industry booms and the rise of a resort economy around Sun Valley and the Sawtooth National Recreation Area, Blaine County today displays dramatic contrasts and juxtapositions of population, development, and politics: immense wealth and rural poverty, foodie culture and small-town food deserts, agriculturalists alongside amenity migrants. Restoration of wolves to these landscapes has only heightened these tensions, bringing with them human ideas of wilderness and remaking relations of land use and access.

Wolves remain targets of political ire and violence throughout the West, as perhaps the quintessential instance of human-wildlife conflict. Bringing insights from critical environmental history and cultural landscape studies together with more recent work in more-than-human geographies can complicate ideas of restoration as always partial, always political claims to (and productions of) space (Cronon 1992; 1995; Whatmore 2002; Margulies & Karanth 2018). We might better understand both wolf conflict and broader tensions of multiple use through the metaphor of landscape as palimpsest (Meinig 1979, 6), in which historical patterns and claims are layered but never fully erased. Rather than restoration of an imagined prior state (ecological or cultural), such a framing emphasizes ongoing and contested coexistence between social groups, species, and processes (Hobbs, et al. 2014). Amid the novel ecosystems of the Anthropocene, attending to the continuous socio-ecological co-production of landscape, and the political quality of coexistence in these "wild experiments" gives political ecologists new tools to engage in ongoing debates over what coexistence and reconciliation might require (Rosenzweig 2003; Robbins & Moore 2013; Lorimer & Driessen 2013).

4. Experimentation and participatory governance

Throughout the West, the turn toward "participation" – whether via public comment, multi-stakeholder decision-making, or community-based resource management – has emerged as a means to alleviate longstanding tensions across the patchwork landscape of public and private property (Hays 1959; Conley & Moote 2003; Charnley, et al. 2014). With water, perhaps the region's most infamous transboundary resource, the participatory turn is often assumed to bring about positive social and environmental outcomes. Success stories like the planned Klamath Dam removal show how participatory environmental governance can engender buy-in from diverse stakeholders and coordination between government agencies (Gosnell & Kelly 2010). Yet participation is far from a cure-all, and political ecology highlights how resource management becomes limited by power dynamics implicit in the production of knowledge (Walker & Hurley 2004; Selfa & Endter-Wada 2008).

Miles City, Montana, situated at the confluence of the Tongue and Yellowstone Rivers, exists almost entirely within a floodplain. In order to protect the city from flooding, a levee system was built along both rivers between the 1930s and 1970s. When the United States Army Corps of Engineers (USACE) completed an updated flood model in 2007, they found significant flaws in this historic levee system. After the Federal Emergency Management Agency (FEMA) expanded Miles City's flood insurance rate map based on the updated model, however, many community members reacted strongly. Locals contested the requirement to pay insurance premiums as well as the legitimacy of federally-constructed flood models, which contradicted historical knowledge of the riverscape. In order to fulfill participatory legal requirements, FEMA and USACE initiated a series of public meetings to ostensibly provide a venue for community members to offer critical feedback. However, agency-led dialogue largely failed to engender community buy-in and exacerbated perceived differences between expert models and local knowledge.

Tensions between these expert and local knowledges and the stymying of stakeholder engagement comes as no surprise to a critical political ecology perspective. However, given that collaboration remains the dominant paradigm for resource management conflicts despite identified limitations, what contributions might political ecology make beyond the hatchet of critique (Robbins 2019)? Recent calls for geographers to adopt more 'experimental' stances offer one way forward (Whatmore 2013; Braun 2015). In an experimental political ecology approach, the process of knowledge production becomes an opening rather than an endpoint. What emerges is an experiment in flood risk mapping: instead of a unidirectional process of knowledge distribution, federal agency representatives, local community members, and researchers themselves engage in a process of deliberative knowledge co-creation, deciding together what risk means and how the burdens of flooding should be distributed (cf. Whatmore & Landström 2011). In a region where outcomes of environmental politics are more than just rhetoric, an experimental political ecology offers the potential to not only support but fundamentally reshape collaborative efforts on the ground. At the same time, experimentation widens political ecologists' own scope of practice by grounding longstanding normative and collaborative aspirations in praxis while maintaining the utility of critique and explanation.

5. Critically engaging landscapes of experimentation

Revisiting some of the region's most enduring environmental conflicts in light of the opportunities presented by political ecology's diverse and syncretic toolkit demonstrates what we might learn about broader processes in this place, as well as what insights regional praxis (often woefully provincial) might gain from elsewhere. Yet these cases – resource economies, wilderness and belonging, local versus expert knowledge – are also quite traditional, for both the region and political ecology generally, and in this way are quite limited. Critical work on the West increasingly points to the untold stories of those left out of dominant historical narratives. This mirrors efforts in political ecology and beyond to attend to historical blind-spots within our own fields around race, gender, and power. A political ecology adequate to our current challenges must thus extend its gaze, from classic concerns of land and resources toward emerging phenomena that do not always fit neatly within conventional categories or understandings.

In the simultaneously and unavoidably social, ecological, and always political landscapes of the American West, we find value in political ecology's evolving big tent as a set of tools for both deconstruction and experimentation, for changing how we see and do political ecology. We hope this call galvanizes and brings together ongoing and future scholarship and action: learning from past efforts, revitalizing older conversations with new infusions, and building a cohort around political ecology in the American West. These grounds seem fertile with possibility – help us plant some seeds!

3. Peace in the Valley?

"Well the bear will be gentle / And the wolves will be tame / And the lion shall lay down by the lamb…"
– Thomas A. Dorsey, "Peace in the Valley" (1937)

This article (Martin, in press B) – accepted for publication in *Conservation Science and Practice* as part of a special section on "Methods for Integrated Assessment of Human-Wildlife Interactions and Coexistence in Agricultural Landscapes" – presents a study of the Wood River Wolf Project as a critical case of collaborative governance and nonlethal coexistence between wolves and livestock. In it, I briefly lay out the history and practices of the Project, exploring its emergence and development since 2008 before turning to the specifics of its practices and some of the major challenges it has faced. Across U.S. Forest Service grazing allotments along the Big Wood River drainage in the north of Blaine County, Idaho, the WRWP has developed and demonstrated nonlethal deterrents for over a decade. Yet promoting coexistence and collaboration between multiple stakeholders has been a challenge, and the Project has struggled to maintain itself amid regional pressures and with reduced capacities, to say nothing of the challenge of scaling up its collaborative coexistence model to the rest of the state and beyond.

Techniques for managing carnivore conflict have garnered attention and study in recent years, with nonlethal tools increasingly normalized and valorized (e.g. Miller, et al. 2016; Moreira-Arce, et al. 2018; van Eeden, et al. 2018). Many of the tools promoted around the intermountain West today were first deployed and developed through the work of the WRWP, including turbo-fladry (first electrified by some of the Project's early partners) and Foxlights (developed in Australia, the Project was the first group to deploy them in the United States). Assessment of these strategies' ecological function and effectiveness has been explored in detail elsewhere, including in Stone, et al. (2017) and Wilkinson, et al. (2020). In this piece I do something different, highlighting instead the broader policy environment and what policy- and practice-relevant insights might be gained from a qualitative social science engagement.

As scientists and practitioners call for greater engagement with local stakeholders and the "human dimensions" of human-wildlife conflict, I argue for the value of qualitative methods and critical social science insights for navigating these complex socio-ecological challenges and promoting conflict transformation (cf. Sayre 2004; Madden & McQuinn 2014). Yet my own experience with publication of this piece highlights the enduring challenges of cross-disciplinary communication, or what Adams (2007) refers to as the "two cultures problem." In revising, I found myself needing to clarify for myself and my audience the import of qualitative methods and case studies in a way that was comprehensible to those with different understandings of science, including a focus on replicability. Despite repeated calls for social science engagement with conservation issues, what such an engagement ought to look like and include remains an open question, and thus a site for intervention from more critical perspectives.

In the context of the dissertation, this article provides an overview of the empirics of my case study as well as a methodological intervention into the HWC literature. I focus on three main questions: 1) Why and how did the WRWP emerge when and where it did?; 2) How did its practices change over time vis-à-vis shifting circumstances; and 3) What are the primary challenges for long-term sustainability and scaling up of this model? My answers to these questions emerge from my qualitative research methods, emphasizing historicization and contextualization and subjecting the Project's development and practices to a political ecology-informed analysis. This piece thus also

serves as a launch point for subsequent chapters, which build on the themes presented in section 5: the costs of conservation, contrary policies, and polarized regional environmental politics.

I worked closely with the Wood River Wolf Project and its partners during my research, even making friends among these groups. In writing on the Project, I thus faced one of the great challenges of engaged scholarship, walking a line between critique and support. It is my hope that through this critical case study I have highlighted lessons to be learned, both positive and negative, so others might learn of the Project's strengths and avoid some of the pitfalls faced, and so that the Project itself might more strategically navigate the challenges in front of them. In the final analysis, I believe the Wood River Wolf Project provides valuable proof of concept, demonstrating *how* to coexist with predators – the tools and techniques, properly applied, *work* – and holding out the possibility of a "win-win" for livestock producers and wildlife. Yet following insights from agroecology (e.g. Aliteri 1995), the transition to sustainability is hindered less by technical know-how than by structural challenges, including policy orientation, funding, and entrenched interests and understandings. Addressing these will be essential to the broader promotion of coexistence and scaling up the WRWP beyond a valuable – yet limited – demonstration.

Peace in the valley? Qualitative insights on collaborative coexistence from the Wood River Wolf Project

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1. Wolf conflict and coexistence

Threats posed by wild predators to human livelihoods, particularly livestock production, have too often resulted in human–wildlife conflict (HWC) to the detriment of biodiversity conservation (Treves & Karanth 2003; Woodroffe, et al. 2005; Dickman 2010). Long-standard practices of lethal control, however, are increasingly controversial and have been shown costly and ineffective over longer timescales (Berger 2006; Treves, et al. 2016; Slagle, et al. 2017; van Eeden, et al. 2017; Lennox, et al. 2018; Moreira-Arce, et al. 2018). Nonlethal strategies for coexistence are thus ever more prominent, along with efforts to assess their ecological effectiveness (Miller, et al. 2016; van Eeden, et al. 2018; Wilkinson, et al. 2020). Yet there remains a key role for the social sciences, particularly qualitative research, in identifying obstacles to and opportunities for long-term sustainability and upscaling of coexistence interventions (Treves, et al. 2006; Bruskotter & Shelby 2010; Glikman, et al. 2019).

Federal reintroduction of gray wolves (*Canis lupus*) to Yellowstone National Park and Central Idaho in 1995 and 1996 has been characterized as one of the great success stories of 20th century conservation (Mech 1995; Randall 2020). Wolves serve as keystone species – contributing to landscape-level restoration through trophic cascade effects on prey populations and the broader ecosystem (Ripple & Beschta 2005; 2012) – as well as charismatic symbols and potential bases for ecotourism revenues (Moore 1995; Lorimer 2015; Macdonald, et al. 2017). These effects are debated, context-specific, and unevenly experienced (Mech 2012; Middleton 2014; Haswell, et al. 2017), however, and wolves' effects on rural residents – particularly through livestock depredation, but compounded by cultural and political polarization surrounding these animals (Nie 2003; Coleman 2009) – have made them an emblematic instance of HWC even 25 years since their return to the intermountain West.

Interventions aimed at predator coexistence, however, are increasingly promoted regionally and globally (Fascione, et al. 2004; Woodroffe, et al. 2005; Frank, et al. 2019). The Wood River Wolf Project (WRWP, or the Project), a collaboration between ranchers, government agencies, and environmental nongovernmental organizations (ENGOs) in Blaine County, Idaho, is one early exemplar. The WRWP has pursued coexistence between wolves and livestock since 2008, demonstrating and developing nonlethal techniques, grazing thousands of sheep while boasting the lowest loss rates in the state, amid a populace and state government at times vehemently opposed to wolf presence. This success has garnered the Project international attention as a model for collaborative coexistence between conservation and rural livelihoods, holding out the promise of a peaceful end to the wolf wars (cf. Fischer 1995; Keim 2017).

In what follows, I first highlight the value of qualitative social science engagement with predator issues, including specific methods employed and how these might inform adaptive governance. I then lay out essential elements of the WRWP's emergence in Blaine County, Idaho following wolf reintroduction. From here, I review the Project's tools and practices, including lessons learned over a decade of implementation amid changing circumstances. Drawing on my qualitative research insights, I then highlight three central challenges the Project has faced and the hurdles these pose for long-term sustainability and upscaling. I conclude by emphasizing the value of insights from the

WRWP for promotion of shared landscapes and convivial conservation regionally and globally (cf. Rosenzweig 2003; Oriol-Cotterill, et al. 2015; Büscher & Fletcher 2019; Western, et al. 2019).

2. Qualitative social science and adaptive governance

Conservation and environmental conflicts are widely-recognized as *wicked problems* – multi-scalar challenges involving diverse stakeholders, dynamic socio-natural interrelationships, and a resistance to simple resolution (Rittel & Webber 1973; DeFries & Nagendra 2017; Mason, et al. 2018). Human–wildlife conflict and coexistence follow this pattern, with an expressed need for more holistic analysis and interventions, including *social-ecological systems thinking* and *adaptive governance* (AG) approaches (Carter, et al. 2019; Glikman, et al. 2019). AG is an emerging framework within environmental governance for analyzing and intervening around complexity, change, and uncertainty. AG brings adaptive management (Holling 1978; Walters 1986; Schreiber, et al. 2004) together with social context, emphasizing local collaboration and co-management (Armitage, et al. 2009; Sterling, et al. 2017). AG thus focuses on the social conditions that enable adaptive ecosystem management, a "range of interactions between actors, networks, organizations, and institutions emerging in pursuit of a desired state for social-ecological systems" (Chaffin, et al. 2014).

Achieving coexistence between predators and human activities, the desired state implied in much of the HWC literature, requires mainstreaming and institutionalizing in order to increase interventions' reach, legitimacy, and long-term sustainability (Carter & Linnell 2016; Linnell & Kaltenborn 2019; Marchini, et al. 2019; cf. Young, et al. 2013). This, in turn, requires knowledge transfer, social learning, and the scaling up of localized insights and practices. Doing so requires identification of obstacles and opportunities, including engagement with broader societal dynamics or "human dimensions." Within this, there is a growing recognition of the value of *qualitative social science* methods and data (e.g. Drury, et al. 2011; Glikman, et al. 2019), despite ongoing challenges of translation across disciplinary and epistemological divides (the "two cultures problem") (Adams 2007).

Discussing the value of qualitative research for understanding ranch management, Sayre points to its attentiveness to context and historical change, greater methodological flexibility, and ability to reveal unanticipated factors and questions (in contrast, "quantitative research can answer only the questions it chooses to pose") (2004, 671). Sterling et al. emphasize the value of qualitative methods for evidence-based planning and decision-making, and qualitative analysis for data that "require subjective interpretation amidst complex and difficult-to-understand patterns of causality" (2017, p. 168). Qualitative methods – interviews, ethnographic observation, participation, and archival research – iteratively evolve through the research process, with questions discovered or modified in response to findings. Qualitative studies are generally smaller and nonrandom, situated in and tailored to context (emphasizing the value of the case study), and thus not replicable. A relational approach to place and the identification of key dynamics, however, can highlight processes that extend beyond local geography and inform subsequent research design (Sayre 2004, 671; cf. Glikman, et al. 2019, 440).

Qualitative insights can help identify policies and structures that either incentivize or discourage shifting norms and practices. Toward these ends, I leave aside cognitive questions of attitudes, values, and tolerance emphasized in the literature (cf. Carter, et al. 2012; Bruskotter & Wilson 2013; Treves & Bruskotter 2014; Manfredo, et al. 2016) in favor of a structural analysis informed by *political ecology* in the interest of *conflict transformation* (Madden & McQuinn 2014; Büscher & Fletcher 2019; Martin, et al. 2019). Between 2015 and 2017, I conducted an intensive case study of the WRWP and its partners in Blaine County, Idaho and the surrounding region, using a mixed methods

approach centered on the Project's history, practices, and broader context. Research included participant observation at sites of livestock production (ranches, rangelands, processors, and farmers markets; sheep trailing, loading, and 4-H community events), as well as assisting with WRWP activities (visiting herders and staff in the field, conducting howl surveys and community outreach, and contributing to collaborator meetings, conferences, and weekly planning). I conducted over 40 semi-structured interviews with Project partners and related stakeholders, including ranchers, government agents (from county commissioners and local mayors up to federal agency representatives), and staff from several ENGOs, complemented by informal conversations among stakeholders and in the wider community. These were supplemented by investigations at local archives – Idaho State Archives in Boise, and the Regional History Department of the Community Library in Ketchum – as well as reviews of agency and organization publications.

Although gray wolves in the Northern Rocky Mountain region are among the most studied populations of large carnivores in the world, Idaho has received significantly less attention from scholars (cf. Young, et al. 2015), even as its multiple-use landscapes are more akin to those places where wolf populations continue to expand than Yellowstone National Park. Idaho is also an important site for longstanding struggles over livestock grazing on public lands (Rowley 1985; Wuerthner & Matteson 2002), relevant to ongoing debates over conservation in working landscapes (Green, et al. 2005; Phalan, et al. 2011; Kremen & Merenlender 2018). The WRWP itself represents a prominent coexistence collaborative around an emblematic instance of HWC, an early adopter and developer of methods that have increasingly become best practices in the region and around the world.

My research builds on studies conducted on the technical and ecological effectiveness of these nonlethal tools and techniques (notably Stone, et al. 2017), while highlighting the challenges of implementation, long-term sustainability, and upscaling of the WRWP's coexistence model. Although the Project has been immensely successful since its initiation in 2008, it has also grown, evolved, and contended with internal and external difficulties. Qualitative investigation of both of its successes and failures (cf. Sterling, et al. 2017, 168) can provide crucial insights for managers, producers, and conservationists (particularly as wolves expand into working landscapes throughout the region), and should help planners and policy-makers better navigate and support adaptive, collaborative solutions to similar challenges in other systems.

3. Blaine County and the Wood River Wolf Project

Although once widespread in North America, landscape-level extermination resulted in the near-complete extirpation of gray wolves from the contiguous United States by the 1930s. Mid-century scientific and cultural re-valuation, however, led to early protection under the Endangered Species Act (ESA) followed by unprecedented federal reintroduction several decades later. Per section 10(j) of the ESA, wolves were released into Central Idaho and Yellowstone National Park in 1995 and 1996 as an "experimental, nonessential" population, allowing for greater management flexibility – including usage of lethal control of depredating "problem wolves" (Fischer 1995; Bangs & Fritts 1996). Despite socio-political conflict surrounding wolves' return, populations grew steadily in number and range, hitting recovery targets in 2000 and triggering the process of ESA delisting. Following a decade of legal back-and-forth, delisting was pushed through via federal budget bill rider

in 2011,[7] devolving wolf management to the state of Idaho under a 5-year federal oversight period concluding in 2016.

Idaho is home to both the highest percentage of state land under U.S. Forest Service (USFS) management and the largest contiguous federally-managed wilderness outside of Alaska – providing substantial wolf habitat and accounting for its choice as a site of reintroduction (Our Public Lands n.d.; USFS n.d.; 2012). Yet much of the state is governed as multiple-use,[8] with livestock grazing continuing alongside recreation and conservation (cf. Rowley 1985). Situated between the Sawtooth Mountains to the north and Craters of the Moon and the Snake River to the south, Blaine County is a crucible of so-called New West dynamics, including the decline of extractive industry dominance vis-à-vis a growing recreation- and service-based economy, and related pressures of rural gentrification (Baden & Snow 1997; Walker & Fortmann 2003; Robbins, et al. 2009; Hines 2010).

Blaine County is also a political outlier in the generally conservative Idaho – often referred to as "an island of blue in a sea of red" – and hosts a veritable ecosystem of ENGOs, from those with explicitly anti-grazing aims to efforts around collaborative range management (cf. Wuerthner & Matteson 2002; Stevens 2014). While the state has been a bastion of anti-wolf sentiment and activism (AP 2002; Ring 2008), Blaine County appears as a hub of tolerance: even prior to reintroduction, the work of the Dutchers outside of Stanley laid important groundwork for public acceptance (Dutcher, et al. 2013). Meanwhile regional development – including an influx of residents not tied to agriculture and with contrasting environmental values – made for a population generally opposed to lethal control (cf. Clark, et al. 2005; Nie 2002; 2003).

Defenders of Wildlife (DoW), a national environmental nonprofit, had been a key player in wolf politics for some time prior to the founding of the WRWP. DoW helped finance and facilitate reintroduction and was a major force in lawsuits against (from their perspective) premature delisting. The organization provided financial assistance for depredation losses through their Wolf Compensation Trust, paying out more than $1.4 million to regional livestock producers before these efforts were taken up by a joint federal and state program in 2010 (DoW 2010). And as early as 1999, DoW was experimenting with nonlethal deterrents, building up experience and their Wolf Guardians Program for protecting livestock (Stone 2014).

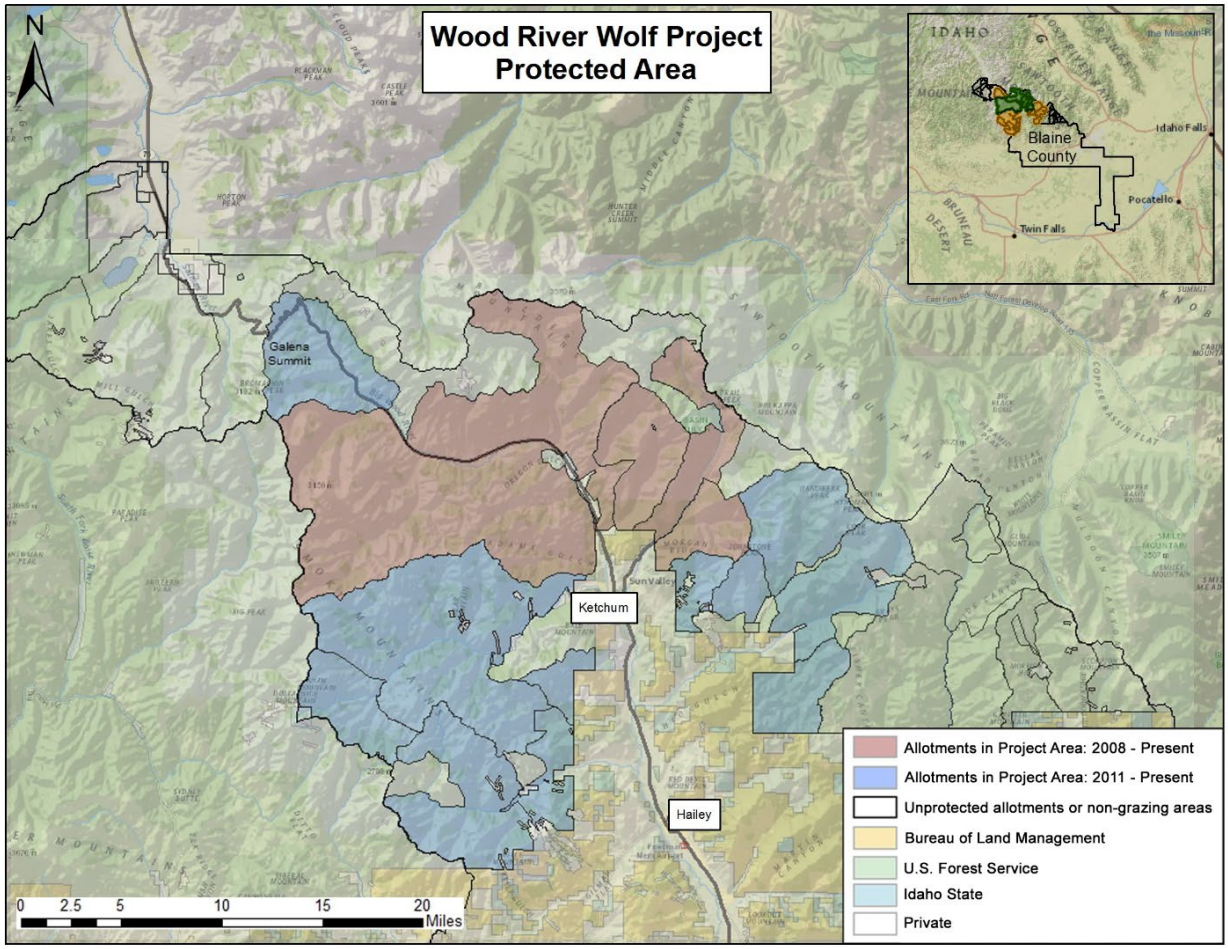
In 2007, a pack of wolves formed in the Sawtooth National Recreation Area, just north of the Wood River Valley in Blaine County. Part of Idaho's "sheep superhighway," these lands had some of the highest concentrations of sheep on public lands in the state, making for a potential conflict hotspot (figure 1). That year, the Phantom Hill Pack killed nine sheep and a guard dog in the Wood River Valley when a band was grazed too near the wolves' den site. DoW met with ranchers, the Idaho Department of Fish and Game (IDFG), and the local USFS district, receiving their approval to try out nonlethal methods. Moving quickly to hire a field technician and get staff camping out with the sheep, DoW's field test was a success, with no further depredations that season. Based on this effort, the Blaine County Commission voted to contribute seed money to the incipient Wood River Wolf Project, which was officially formed in 2008 (table 1).

[7] Department of Defense and Full-Year Continuing Appropriations Act 2011 (Public Law 112-10, April 15, 2011).

[8] Multiple-Use Sustained-Yield Act of 1960 (MUSYA) (Public Law 86-517).

Figure 1: Project Area of the Wood River Wolf Project.

The Wood River Wolf Project Protected Area consists of U.S. Forest Service allotments along the Big Wood River drainage. It has expanded since initial establishment in 2008, and today covers over 1000 square miles of Sawtooth National Forest lands in Blaine County, Idaho. Since the 1880s, grazing in the Wood River Valley has followed a transhumance cycle: herders trail their charges north from the Snake River Plain in the spring, following the "green up" into the mountains for summer, and then back down to home ranches in the fall. Today's grazing season runs from approximately May through October, during which bands of 1,000–1,500 sheep traverse public and private holdings up valley. Many grazing allotments, including all of those in the Ketchum Ranger District, are currently permitted as sheep/goat allotments due to the rugged terrain. Map modified from the original by Avery Shawler, former WRWP Coordinator (reproduced with permission).



4. To conserve and protect

Domestic sheep (*Ovis aries*) are particularly vulnerable to wolf depredation, falling prey in much greater relative numbers than cattle, including via pileups and surplus killing (Muhly & Musiani 2009; Levy 2013).[9] Reactive lethal control has been standard practice in Idaho since the early years of reintroduction, with aerial gunning, hunting, trapping, and snaring coordinated between IDFG and Wildlife Services (WS).[10] Yet lethal control's effectiveness has been widely questioned, with significant public debate and low consensus among conservation professionals (Nie 2002; Lute, et al. 2018; Moreira-Arce, et al. 2018;). Ranchers and public agencies have thus increasingly aimed for *deterrence*: avoiding or reducing interaction between predators and livestock and hence the likelihood for depredation and social conflict.

For over a decade and across more than 1,000 mile^2 of western range, the WRWP has demonstrated the feasibility of shared space between wolves and livestock. While not meeting "gold standard" rigor of a controlled experiment (van Eeden, et al. 2018) – the WRWP was designed as a test case and management intervention rather than a scientific study – Stone, et al. (2017) demonstrate the effectiveness of the Project's suite of interventions compared to outcomes outside the protected area.[11] During the grazing season, when wolf-sheep interactions on national forest grazing allotments are most likely, the WRWP coordinates with livestock producers and government agencies to keep wolves away and losses to a minimum. Project staff communicate with collaborators (sharing information and gathering on-the-ground insights from them), and when needed meet with herders on the range to deliver, demonstrate, or directly deploy deterrents – aiming to make lethal control a last resort, to be used only after preventative and nonlethal efforts have failed.

The WRWP promotes coexistence by reducing negative interactions between wolves and livestock (Table 2). Three broad strategies – (1) avoiding interactions through *reconnaissance*; (2) proactive management through livestock *husbandry*; and (3) keeping wolves away through hazing techniques and *mechanical tools* – all emphasize avoidance and deterrence (cf. Miller, et al. 2016; Much, et al. 2018; Wilkinson, et al. 2020). Relying on wolf neophobia to induce a landscape of fear, these interventions aim to increase perceived costs of preying on sheep, redirecting predation onto wild ungulates instead (Iliopoulos, et al. 2019; Miller & Schmitz 2019).[12] Such efforts promote management of the public range for both wildlife habitat and human livelihoods, a form of landscape-scale coexistence.

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[9] Although making up only a small fraction of overall livestock mortality, wolf losses can be significant for individual producers (Graham, et al. 2005; Muhly & Musiani 2009; cf. Steele, et al. 2013).

[10] Part of the United States Department of Agriculture Animal and Plant Health Inspection Service, (USDA APHIS), Wildlife Services is a federal agency with significant variation between state offices.

[11] Results from Stone, et al. (2017) indicate that the WRWP's nonlethal methods significantly reduced depredation (sheep were killed 3.5 times higher on average in the neighboring nonprotected area), reduced the need for lethal control of problem wolves, and helped convince herders and operators of the effectiveness of nonlethal deterrents. In its first 7 years, documented losses in the Project Area were kept to less than 1% of stocking numbers – 90% lower than reported losses in the rest of the state – with lethal control kept to zero. (The authors also highlight limitations of these inferences and the need for further research.)

[12] The functional effectiveness and ecological mechanisms by which these strategies work has been covered in depth elsewhere (see Stone, et al. 2017; Wilkinson, et al. 2020; cf. Treves, et al. 2016).

Table 1: Wood River Wolf Project Timeline

Phase	Dates	Milestones	Description
Field test	2007	• 2007: Phantom Hill depredation incident.	Defenders of Wildlife coordinates with ranchers and government agencies to provide field technician and staff assistance for remainder of the grazing season.
Phase I	2008 - 2010	• 2008: Blaine County Commission contributes funds to help start WRWP. • 2010: Federal program takes over livestock depredation compensation, freeing up DoW resources for "Wolf Coexistence Partnerships" (DoW 2010).	Project officially established as a collaborative. Three-year field study includes paid DoW field technicians, radio collar and telemetry-based wolf tracking, and experiments with various nonlethal deterrents.
Phase II	2011 - 2014	• 2011: Project area expands. • 2011: ESA delisting, wolf management devolved to Idaho state (IDFG). • 2014: City of Ketchum issues Resolution 14-022 recognizing the value of the WRWP.[13]	With ongoing community interest, DoW continues sponsorship of Project, developing and demonstrating new tools and refining techniques. Transition to direct employment of deterrents by herders and livestock operators, with Project personnel as consultants and intermittent field assistants.
Phase III	2015 - present	• 2015: Lava Lake Institute for Science and Conservation (501(c)(3) nonprofit) takes over from DoW as fiscal agent for WRWP. • 2016: WRWP issues official mission statement: "The Wood River Wolf Project collaborative promotes the coexistence of livestock and wolves by proactively using nonlethal measures to prevent depredation."[14] • 2017: Stone et al. published, documenting results from first 7 years of the Project.	Project continues emphasis on herder training and direct deployment of deterrents, including development of band kit for easier transport and use.

[13] Resolution 14-022. 2014. "A resolution of the city council of Ketchum, Blaine County, Idaho supporting the values of wildlife coexistence and recognizing the Wood River Wolf Project." Passed and approved September 15, 2014. Signed Nina Jonas, Mayor. http://ketchumidaho.org/documentcenter/view/2251.)

[14] The author (JVM) contributed to the drafting of the mission statement in collaboration with the WRWP.

4.1 Reconnaissance

Attaining even baseline information on wolf population and distribution is a perennial challenge (Ausband, et al. 2014; Ausband 2016). What information can be gathered, however, can structure grazing patterns and direct deployment of labor and deterrents. As one WRWP rancher and steering committee member noted, "If we know where the wolves are, we can minimize interaction. If we don't, our first indication that they are in the area is when we see them 200 yards from the sheep" (Wutz 2011).

Early on, the Project used telemetry scanners as a key tool for avoidance, allowing herders to preemptively move bands away from known wolf locations. A radio-activated guard system (RAG boxes) triggered by wolf presence provided a backup warning system. However, these tools relied on radio-collaring conducted by the U.S. Fish and Wildlife Service and later IDFG. As IDFG moved away from collaring due to cost concerns and shifting management priorities, these and similar methods became unusable (Martin, in press A).

In Phase 3, the WRWP has thus used a combination of trail cameras, howl surveys, and public communication to build a picture of wolf presence on the landscape. Such methods are time- and labor-intensive, however, and have notable limitations (howl surveys, for instance, demonstrate presence but not absence, and require hours trekking into the backcountry; see Figure 2). These techniques also lack the precision and immediacy of radio-collaring and telemetry: camera surveys require manual review of thousands of photographs, often taking place days or weeks after their capture in the field, making them unfit for real-time adjustments in practice.

Table 2: Nonlethal tools and techniques used by the WRWP

Type	Tool	Notes
Reconnaissance	Telemetry scanners	• Hand-held receivers to track radio-collared wolves. • Defunct (IDFG no longer using large-scale radiocollaring/tracking of wolves ca. 2015.)
	Radio-activated guard (RAG) boxes	• Alarm triggered by presence of radio-collared wolves. • Defunct (IDFG no longer using large-scale radiocollaring/tracking ca. 2015.)
	Trail cameras	• Motion-triggered, noninvasive. • Combination of IDFG-provided and Project-owned. • Recent cameras (2018 - 2019) acquired and deployed as part of a collaboration with Boise State University.
	Howl surveys	• Recordings of wolf howls played at dawn/dusk in backcountry locations; wolf responses noted. • Requires overnight backpacking.
	Public communication	• Farmer's market tabling; trail signage; web and social media communication.

		• Inform public, promote Project, gather wolf sighting information.
Husbandry	Active management	• Herding of livestock to avoid known wolf locations. • Rapid treatment of sick and injured animals. • Carcass removal to reduce attractants to predators.
	Livestock guardian dogs	• Great Pyrenees, Akbash, or cross-bred. • 2–3+ deployed with bands: Alert herders and drive off predators. • May be outfitted with nail-spiked collars for extra protection.
	Human presence	• Herders, WRWP staff, and/or community volunteers. • Includes proactive and reactive deployment of mechanical tools.
Mechanical – light	Foxlights	• Computerized flash with nine LED bulbs simulates flashlight patrol; projects 360 degrees up to 1 km away (solar- and battery-powered available). • Invented/developed by Australian sheep farmer Ian Whalan, first used in the United States by the WRWP.
	Spotlights	• High-intensity lamps (500 lm). • Used in conjunction with herder headlamps.
Mechanical – sound	Starter pistol	• Shoots .22 blanks, providing sudden loud noise. • Safer alternative to live ammunition. • Reduces chance of accidental wildfire.
	Boombox, wireless speakers	• Loud music is unfamiliar on the range; extends spatial reach / alerts predators to human presence.
	Air horn	• Loud and jarring noise, used for hazing.
Mechanical – barrier	Fladry, "Turbofladry"	• Mobile fencing, flags (tape/cloth) hung at 1800 intervals on polypropylene cording or similar using temporary fence posts (metal or fiberglass). • "Turbo" developed by Rick and Carol Williamson; adds battery-powered electrification, particularly effective at night.

4.2 Husbandry

Rangeland sheep operations necessitate herding, and WRWP partner ranchers practice low- to high-intensity husbandry and occasional night enclosure as dictated by grazing regulations, local conditions, and operator preference (cf. Graham, et al. 2005). Although grazing largely follows pre-established agency plans, these are sufficiently flexible – especially with the USFS part of the

collaborative – to allow for modification to reduce grazing impacts and avoid areas of known wolf activity.[15]

Livestock guardian dogs have long been used in the region to defend bands against coyotes and other threats. These "big white dogs" (largely Great Pyrenees, Akbash, or crosses thereof) are raised with ewes to form a tight and protective bond with the sheep. Deployed with the bands, dogs perform both an alarm and defensive function: barking when they sense predators to alert herders and hopefully drive the threat away, and giving chase or standing between approaching wolves and livestock, at times at the cost of their own lives.[16] Use of dogs must be strategic, however, as animals are costly (several hundred dollars each, plus feed, and care), and can cause problems when deployed near recreationists (where their size and demeanor can evoke fear) or wolf den sites (where they provoke defensive reactions from territorial packs).

Human presence remains the most effective tool for keeping wolves away. Suzanne Stone, then DoW's northwestern regional wolf conservationist and a founder of the WRWP, relates chasing wolves out of a sheep band by banging on a pot with a wooden spoon. Human presence is also, however, the most challenging tool to consistently implement. Under DoW leadership the Project maintained a paid field staff that could spend the night with bands under threat, but such practices are no longer feasible at the same scale and level of reliability. As one former Project Coordinator noted, "…we don't have the time or money or staff to go out…in quote-unquote 'full guardian mode'…you just simply can't cover the same amount of ground with a tiny staff."

4.3 Mechanical

Mechanical tools are those most typically referred to as *nonlethal deterrents*, and include light, sound, and barriers deployed ahead of and in response to known wolf presence. These tools can be effective and labor-saving, but skepticism comes from stories or experiences of improper deployment – making one of the Project's major aims to correctly demonstrate and train others in their proper use.

Fladry is a simple and cost-effective mobile fencing system based on historical practices from Eastern Europe (Iliopoulos, et al. 2019; Musiani, et al. 2003). Rick Williamson, the late Wildlife Services agent and WRWP collaborator, made fladry "turbo" by adding electrification, while his wife, Carol, constructed the first miles of the new tool on her sewing machine (Wutz 2011; Stone 2014). In the Project Area this tool was found too labor intensive – carrying and installing fence posts in the rocky and remote conditions of Idaho sheep range was often more trouble than it was worth – though it has become prominent throughout the region (Baca 2019). Foxlights (first used in the United States by the WRWP) deter by simulating a person walking with a flashlight, while boomboxes "stretch" fear effects beyond active human presence – both have become useful preemptive tools for night bedding, when sheep are often most vulnerable to depredation.

Over a decade of adaptive deployment and institutional learning, the Project has shown that there is no "silver bullet" or one-size-fits-all approach to deterrence: tools must be adapted to context and used in rotation and combination to avoid wolf habituation to any individual deterrent. Beginning in

[15] Others have noted similar synergies between nonlethal management and sustainable grazing, including with range riders and cattle (Barnes 2015).

[16] Researchers and ranchers have noted that while Great Pyrenees and Akbash are effective for coyotes, they are not ideal for confronting wolves, who as pack hunters tend to outnumber the guard dogs. Identification and import of more appropriate breeds are ongoing (Ridler 2018; Kinka & Young 2019).

Phase 2, the Project moved away from direct deployment toward herder training in and use of deterrents. The Project now uses the band kit, a collection of tools in a duffel bag meant to accompany each sheep band, to help facilitate adaptive deployment by herders themselves.

Figure 2: Examples of WRWP methods

(a) WRWP staff and volunteers returning from a night conducting howl surveys.

(b) Farmer's market information table, with trail camera and Foxlight visible.

(c) A livestock guardian dog with sheep (photo courtesy of Phoebe Bean).

(d) WRWP staff demonstrating the band kit to a partner rancher.

5. Adaptation and its limits

On September 13th, 2018, a Wildlife Services agent shot and killed a young male wolf on Forest Service lands east of Sun Valley, Idaho. While not atypical in the state, this was the first instance of lethal control in the Project Area since the creation of the WRWP. More frustratingly, the call came from one of the Project's own long-time partners. That rancher reported that his herders had used guns to try to scare off wolves and posted an extra man with the sheep, but still lost 10 to depredation, along with guard dogs killed and injured. Subsequent WRWP investigation, however, noted that the herder camp was set up more than two miles from the bands, and that none of the band kits provided (over $9,000 worth of equipment) were with the sheep (Moore 2018).

Over more than a decade of applied efforts, the WRWP has demonstrated both the potential and pitfalls of an adaptive governance approach to wolf-livestock coexistence. Nonlethal tools and techniques have been shown to be effective, efficient, and reliable: properly applied, deterrence can reduce depredation over significant time and spatial scales and thus the need for lethal control (cf. Much, et al. 2018; van Eeden, et al. 2018). Through adaptive "learning-by-doing" (Stone 2014), the

WRWP developed or refined many of the tools now emerging as nonlethal best practices in similar systems across the region (cf. Baca 2019). Knowledge transfer, both among its partners and through regional trainings,[17] helped the Project combat skepticism and resistance from operators and wildlife managers.

Since 2008, however, the WRWP has had to contend with changing conditions – from delisting to the end of DoW sponsorship – which have raised important questions around the limits of technical interventions and the challenges of long-term viability. Following Schusler, et al. (2003), social learning is essential yet insufficient: capacity, supportive policy, and appropriate structures are crucial for successful adaptive governance (cf. Chaffin, et al. 2014). Long-term sustainability and scaling up of the WRWP's collaborative coexistence model require sober assessment of these challenges. Drawing on insights from qualitative research on the Project's history, partners, and broader context, I review three key obstacles for the WRWP and similar coexistence efforts: the economic costs of conservation; the effects of contrary policy; and the socio-political challenge of collaboration amid polarization.

5.1 Conservation costs money

Ranchers and rural residents frequently complain that while urbanites and environmentalists like wolves, they do not have to bear the costs and consequences of living with them. As one rancher put it, "conservation costs money." Nonlethal methods are time-, labor-, and resource-intensive, and require a transition away from historically-established practices and norms. Although elimination of wild predators is also costly – involving helicopters, trained sharpshooters, and trackers – these are borne not by individual operators but distributed through a broader taxpayer base.[18] As WRWP leadership has critically noted, producers obtain effectively free lethal control just by "picking up the phone."

The WRWP has done much to subsidize and support operators around the added costs of nonlethal tools: Project staff and volunteers provide free labor for coordination, distribution, and deployment; grant money has gone to development and free provision of band kits; and the Project has cosponsored educational workshops and trainings in various practical techniques. Yet the WRWP has also struggled with the costs of sustaining itself, particularly since the Phase 3 transition. With a much-reduced staff, the Project has had to modify its practices and put more on remaining employees and volunteers. The Project is further limited by the cycles of nonprofit funding and fluctuating popular attention – one former Project Coordinator noted they spent less time coordinating the Project's activities and more time trying to fund it.

While attacking subsidies has become "boilerplate political and environmental strategy," subsidy and taxation are key ways in which states and societies support and discourage particular behaviors; the issue is "in which direction these subsidies should flow" (Nie 2002, 69; cf. Wuerthner & Matteson 2002). Such questions are part of broader debates on funding conservation (Malcom, et al. 2019; cf. Martin, in press A), and link up with calls for public investment to shift agriculture to more sustainable approaches (Montenegro, et al. 2019). As with depredation compensation, it may be time for a public agency to step in to provide at a scale a small nonprofit simply cannot. Project collaborators have themselves expressed the desire that WS might build on the WRWP model, in

[17] See https://www.woodriverwolfproject.org/outreach for documentation of these efforts.

[18] Cost differentials between lethal and nonlethal techniques are difficult to calculate in part due to a lack of full-cost accounting.

turn fulfilling their own mission to "improve the coexistence of people and wildlife" (Wildlife Services 2015). WS's research arm at the National Wildlife Research Center in Fort Collins, Colorado, has been developing tools for predator coexistence for over two decades (Kinka & Young 2019; Young, et al. 2019), and the agency has begun to promote nonlethal deterrents in collaboration with livestock producers around the country (Baca 2019; Few, et al. 2019; Strong 2019) – although much less so in Idaho.

5.2 Contrary incentivization

While allowed under the ESA 10(j) designation, prior to delisting Idaho was under pressure to limit lethal control in order to maintain a viable wolf population in the state. A 2002 lawsuit further resulted in a temporary injunction on lethal control within the Sawtooth National Recreation Area;[19] emergence of the WRWP 5 years later demonstrates the value of legal-regulatory pressures for encouraging adoption of nonlethal alternatives. Since 2016, however, keeping wolves alive has become less of a state management imperative. Combined with the continuation of "no strings attached" compensation – zero requirements that operators adopt preventative practices in order to qualify – there is little in the way of regulatory pressure toward adaptation.

Indeed, the Idaho state legislature has made explicit declarations against wolf presence in the state, including in the 2002 wolf management plan.[20] Since delisting, Idaho has extended public "harvest" – wolf trophy hunting seasons – as part of a strategy to reduce overall numbers. In 2014 then Governor Otter authorized the Idaho Wolf Control Board, a separate body from the IDFG with state funding – $2 million over 5 years – going exclusively to lethal control (DoW 2014). In 2020, IDFG approved rules to define much of southern Idaho as a "wolf-free zone" with year-round hunting seasons (Moore 2020).

These practices continue despite their associated costs, questionable benefit to industry, broader public opposition, and, of course, the availability of nonlethal alternatives (Berger 2006; Lennox, et al. 2018; van Eeden, et al. 2018). Regardless of their rationale, such policies reinforce a narrative of crisis and incompatibility between wolves and livestock, rather than one of adaptation (cf. Carter & Linnell 2016). Project partners are understandably cynical, noting a system "set up" to make it easy to kill predators; to quote Stone, "it's still the dark ages in Idaho." Nonlethal methods have no federal or state support comparable to extant programs for lethal control, making coexistence in Idaho reliant exclusively on the choices of individual ranchers in their pursuit of noneconomic values (Smith & Martin 1972; Sayre 2004; cf. Manfredo, et al. 2016). Linnell, et al. (2001) note the feasibility of predator coexistence under favorable policy contexts, but the converse is obviously also true: unfavorable state policies discourage and undermine efforts at coexistence (cf. Hutton & Leader-Williams 2003; Nie 2004).

5.3 Complicating collaboration

The WRWP has emphasized collaboration as a key part of its overall effort and identity since its initiation. Project discourse reflects the win-win priorities recognized in the literature around environmental conflicts: seeking common ground among stakeholders with divergent interests

[19] The United States District Court for the District of Idaho. Western Watersheds Project and Idaho Conservation League vs. Sawtooth National Forest, Bill Levere, Sawtooth National Forest Supervisor, and USFS, Case No. CIV 01-389-E-BlW.

[20] Idaho Legislative Wolf Oversight Committee. 2002. "Idaho Wolf Conservation and Management Plan." https://idfg.idaho.gov/oldweb/docs/wolves/plan02.pdf.

through empowerment, trust-building, and conflict transformation (cf. Rosenzweig 2003; Treves, et al. 2006; Charnley, et al. 2014; Madden & McQuinn 2014; Frank & Glikman 2019). In practice, however, collaboration is no easy task, and the Project continues to struggle with buy-in from its own partners.

Given a history of environmentalist-rancher tensions around grazing on public lands, distrust and skepticism were often bubbling beneath the surface. The Wood River Valley is home to groups that saw DoW as "traitors" for working with ranchers, and both the Project and deterrence itself have been called out as "a delusion" (Wuerthner 2017).[21] Working together became difficult when ENGOs were elsewhere involved with policy and litigation viewed by some livestock producers as an attack. Ranchers expressed feeling "stabbed in the back," including during the long debacle surrounding delisting in which DoW played a central role. This dynamic in part accounts for DoW's decision to step away from leadership in Phase 3: the organization's prominent association was a red flag for many, while local leadership made collaboration far more palatable.

Anti-wolf sentiment is deep-seated, bound up with long-standing societal tensions around belonging, appropriateness, and regional transformation (cf. Hays 1959; Wilkinson 1992; Brick & Cawley 1996; Cronon 1995; Baden & Snow 1997; Martin, et al. 2019). What is an acceptable risk of depredation thus becomes deeply political, with wolves understood in profoundly different ways than other threats to livestock or even other predators, based in part on how they have been enrolled in broader regional politics. Participation, as Sterling, et al. note, is a process of continual and nonlinear negotiation (2017, 166), highlighting the need for adaptive governance approaches. Yet engagement with the deeper drivers of conflict in the interest of conflict transformation may exceed the means of local collaboratives. HWC, particularly around contentious and charismatic species like wolves, likely necessitates a multi-scalar and multidisciplinary intervention that can address broader politics and regional anxieties (cf. Madden & McQuinn 2014; Büscher & Fletcher 2019; Glikman, et al. 2019).

6. Toward convivial conservation

Despite polarization surrounding wolves and livestock grazing in the American West, the Wood River Wolf Project has had demonstrable success for over a decade. Amid the challenges of both deterrence and collaboration, the Project has evolved from coexistence testing ground, to demonstration site for novel tools and best practices, to globally-known effort at adaptive governance and conflict transformation. It has contributed to mounting evidence for the functional effectiveness of nonlethal methods and shown the feasibility of shared space between wolves and livestock.

As wolf recovery pushes these questions to the landscape-scale, co-adaptation and coexistence may exceed the capacities of groups like the WRWP, with broader socio-political questions becoming even more important (Nie 2002; 2003; Clark, et al. 2005; Carter & Linnell 2016). Promoting landscapes of coexistence, a prospect itself debated among conservation professionals (Oriol-Cotterill, et al. 2015; Lute, et al. 2018), will require more than technocratic interventions. Convincing ranchers to try – and stick with – nonlethal approaches necessitates engagement with concerns beyond depredation: confronting contrary policy, regional socio-economic pressures, and

[21] Some WRWP staff do express skepticism around the value and appropriateness of livestock on public lands, but as Stone noted, "wolves should not have to pay the price for that conflict."

recognizing the always-social and always-political aspects of environmental conflict (Robbins & Moore 2013; Madden & McQuinn 2014; Manfredo, et al. 2017; Büscher & Fletcher 2019).

HWC is widely-regarded as one of the most critical challenges facing conservation today. Between climate and land use change, sharing space with wildlife is set to become an ever more pressing concern. On-the-ground efforts like the WRWP provide important proofs of concept, sites of experimentation, and glimmers of hope. Yet the Project's experiences also point to challenges of institutionalizing adaptive governance amid a lack of capacity and hostile legal-political contexts. Qualitative research can help us to learn from local efforts while identifying broader challenges, to better engage the political, economic, and cultural aspects of socio-ecological systems, and to design interventions and policies to more effectively encourage transitions toward coexistence.

4. Between Scylla and Charybdis

> *"… 'you must hug the Scylla side and drive ship by as fast as you can, for you had better lose six men than your whole crew.' / Is there no way,' said I, 'of escaping Charybdis, and at the same time keeping Scylla off when she is trying to harm my men?'"*
> – Homer, *The Odyssey*

The subsequent text (Martin, in press A) has been accepted for publication in *Geoforum* as part of a special issue on "Geographies of Uncertainty," which emerged from a series on "Living with Uncertainty: Science, Environments, the Everyday" at the AAG Annual Meeting in New Orleans in 2018 (many thanks thus go out to the organizers, Nari Senanayake and Brian King, as well as our discussant, Rebecca Lave).[22] In my talk and this paper, I focus on the positionality and practices of agents with the U.S. Forest Service and Idaho Department of Fish and Game around the controversial environmental questions of public lands livestock grazing and gray wolf management. Borrowing a scene from *The Odyssey* as a guiding conceit, I explore how these social actors carry out the governance of complex natures amid reduced capacities (the whirlpool Charybdis) and socio-political controversy (the monster Scylla).

Following PE's tradition of considering situated practice – here of managers, rather than resource users per se – and continuing a theme of critical understanding expressed in the previous chapter, in this article I attempt to explain seemingly irrational practices of reduced environmental monitoring and data collection. Drawing on insights from early PE focusing on contextual pressures and historical change, I aim to clarify the logic of the seemingly illogical and identify key drivers of degradation (cf. Watts 1983; Blaikie & Brookfield 1987; Robbins 2004). Practice shifts toward "illegibility" are driven, I argue, by structural pressures on agents themselves, who must contend with complexity and contrary aims amid budget cuts and legal-political assaults. Asked to do more with less while subject to attacks from all sides, agents opt to collect less or more ambiguous data on their charges as a sort of adaptive strategy, yet one with potentially negative consequences for species and ecosystems of concern.

Critically engaging James Scott's work on legibility (1998) alongside a growing literature around agnotology and uncertainty – drawing in particular on the work of sociologist Linsey McGoey around "strategic ignorance" (2012b) – my analysis highlights the political quality of data *and its absence*, complicating views of bureaucratic rationality and the relationships between (non)knowledge and power. I explore illegibility as simultaneously A) the converse of Scott's legibility (if certain aspects of a complex reality are brought into focus by techniques of making legible, others are by extension pushed out of focus); B) a defensive adaptation by those on the ground tasked with "making it work" despite structural contradictions (cf. Robertson 2006); and C) a political strategy of agency higher-ups to potentially dodge responsibility (a problematic "see no evil" approach). This chapter thus speaks to questions raised above around government policy and state agencies: these actors are in a key position to provide or withhold public legitimation and material support for conservation efforts (cf. Malcom, et al. 2019), and illegibility provides one lens onto environmental managers' decision-making.

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[22] The original talk was titled: "Intentional Illegibility in Western Range Management: (Weapons of) the Weak State."

Since the writing and acceptance of this piece I have come across more and more complementary arguments (e.g. Brugger, et al. 2020), and found that those I present herein are recognizable to people engaging similar issues around the region. This is encouraging, as this kind of resonance is one of my major goals in writing on these issues: the hope that those involved in such issues recognize the patterns I present, and that my analysis might provide a valuable explanation of their own experiences. Yet this piece also speaks to questions beyond contemporary environmental governance challenges in the West. The nexus of data, science, and politics, as well as questions of uncertainty, are of broader social justice concern, particularly as we contend with moves toward greater legibility via "big data" and "anti-science" currents from above and below, all against the backdrop of ongoing neoliberalization (cf. Dillon, et al. 2019; Scoones & Sterling 2020). Indeed, themes of illegibility can be seen in a particularly devastating form amid the COVID-19 pandemic, as the federal government continues to under-support public testing.

Implicit in this chapter and my work broadly, then, is the question of how we *do* science and conservation amid structural challenges. Scholars from political ecology and science and technology studies has highlighted the power relations within and produced by scientists and managers (cf. Latour 1987; Peluso 1992; Robbins & Moore 2013). Yet what we do with these critiques – how they might be incorporated into the praxis of agents themselves – often remains unclear. Where, in other words, is the seed of transformation to match the hatchet of critique (Robbins 2004)? While I do not present an answer here, I do argue for the ongoing need to support – materially, culturally, and politically – those aims seen as socially and ecologically valuable, through support of those actors tasked with carrying out this work, sailing choppy seas not of their own making.

Between Scylla and Charybdis: Environmental governance and illegibility in the American West

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1. Governing on contentious terrain

In *The Odyssey*, Homer describes an episode in which Odysseus and his crew must navigate the Strait of Messina between two great hazards: the six-headed monster Scylla on one side, and the whirlpool Charybdis on the other. I use this metaphor to conceptualize the positionality and choices made by government agents charged with the management of species and environments in the American West amid public controversy and declining capacities.

Environmental governance in the U.S. takes place across a "checkerboard" of land ownership and use patterns and at times overlapping and conflicting agency responsibilities (see Fig. 1, Section 1) – a longstanding instance of the now "increasingly common imbrication of multiple types and scales of authority over given territories" (McCarthy 2007, 190). Public lands make up more than half of the 11 contiguous western states, much of it managed by the U.S. Forest Service (USFS) and Bureau of Land Management (BLM). Governance of resources and wildlife on these lands, then, make federal and state agencies central – and contentious – players in the region.

Idaho provides an important arena for considering environmental governance: the state is nearly two-thirds public land[23] – much of it managed as "multiple use" working landscapes – and it was one of two reintroduction sites for the gray wolf (*Canis lupus*) in the mid-1990s.[24] Based on research conducted in and around Central Idaho between 2015 and 2017, I focus here on the experience and practices of midlevel career employees of the U.S. Forest Service and Idaho Department of Fish and Game (IDFG), with their respective responsibilities around rangeland livestock grazing (an long-standing but increasingly controversial resource use),[25] and the management of the state's wolf population during and after the transition from federal to state management (as endangered species protections have been removed, and as wolves are seen to pose a threat to rural livelihoods). Management of lands, resources, and species amid competing users, claims, and priorities puts agents in the middle of environmental controversy and regional politics, especially as the Idaho and surrounding states continue to transition from extractive industry dominance to so-called "New West" patterns of rural gentrification and recreation (Walker 2003; Ghose 2004; Hines 2010; 2012; Bryson & Wyckoff 2010).

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[23] Idaho holds the highest percentage of state land under national forest as well as the largest contiguous federally managed wilderness outside of Alaska (Our Public Lands, n.d..; USFS 2012; n.d.).

[24] Wolves were reintroduced through federal action to Yellowstone National Park and Central Idaho in 1995 and '96 (see Fischer 1995).

[25] Privately-owned livestock have long grazed on the public domain, and since the establishment of the Forest Service have done so through a system of leased allotments (see Rowley 1985; Sayre 2017).

Figure 1: Management and concerns around land and species in Idaho

Nature	Manager	Concerns
Land (resource, range, habitat)	US Forest Service (USFS) + Bureau of Land Management (BLM)	Ecosystem health, resource extraction (timber, livestock grazing), recreation
Livestock (sheep, cattle)	Land Agency (USFS or BLM) + Private Operators	Range quality, wildlife impacts, depredation, environmentalist opposition
Wildlife (species of concern, e.g. wolves)	State Fish & Wildlife Agency (IDFG) + US Fish & Wildlife Service (USFWS)* *(when under ESA protection)	Population viability, predation on game and livestock, public interest

Resource and wildlife management has historically leaned on measurement and monitoring, with quantitative data on numbers, presence, and trends central to analysis and policy making (Porter 1995). New technologies of surveillance and data science seemingly allow for ever-greater capacities to make landscapes and species "legible" and thereby governable (Scott 1998; Arts, et al. 2015; Adams 2017). Yet on-the-ground decisions around what is done and how do not follow traditional assumptions of evidence-based scientific management. Through implicit and pragmatic choices around day-to-day practices, technologies employed, and where time and attention get spent, agents appear to collect less or more ambiguous information on their charges, resulting in a lack of knowledge and subsequent problems for on-the-ground management. This partial blindness, in contrast to Scott (1998), I term *illegibility*: understood as the simultaneous production of particular forms of knowledge alongside "nonknowledge" or ignorance.

I thus build on work by Li (2005) and others in a constructive critique of legibility and state power, bringing together insights from political ecology, science and technology studies, and an emerging "sociology of nonknowledge" to help think through agents' decision-making. Following Dillon, et al. (2019), I position these arguments in the context of pressing contemporary concerns: the current administration's increasingly anti-environmental stance and dismissal of evidence-based claims, capital's capture of regulatory agencies along with the slashing of regulations and efforts to defund and dismantle scientific work, and amid a longstanding trend of neoliberalization. Squeezed between budget cuts on one side and political pressure and litigation on the other, agents pursue a sort of "satisficing" strategy to avoid reaction in the face of unrealistic demands (cf. Simon 1956; Smith & Martin 1972). Through these insights I hope to help account for the seeming disconnect between agencies' stated aims and practices, and make sense of the apparent dysfunction around environmental governance in the American West today.

In what follows, I first review the literatures on state power and scientific practice, bringing into conversation a broadly construed political ecology with an emerging literature on uncertainty and ignorance. I then examine the practices of USFS and IDFG agents around rangelands and wolves through the conceit of *The Odyssey*'s Scylla and Charybdis. Agents attempt to carry out their responsibilities (keeping the "ship of state" sailing (cf. Plato 360)) amid the "choppy seas" of socio-ecological complexity, the "whirlpool" of declining capacities, and the "monster" of political controversy. I then show how agency practices manifest forms of illegibility, a seemingly paradoxical

outcome produced by broader contextual pressures and situated motivations. I close with some of the implications this analysis holds for our understanding of the relationship between scientific knowledge and power and in our current political moment.

2. Governance and non/knowledge

In *Seeing like a State* (1998), James Scott argues that the increased capacities of the modern state were bound up with efforts to classify and measure, overcoming a pre-modern "partially blind" relationship to territory and subjects. Drawing on Foucault and Weber, Scott is interested in how environments and populations are made *legible* and thereby governable. Diverse technologies of surveillance and planning – such as the cadastral survey and scientific forestry – measure, classify, and standardize nature and society in ways that simplify and benefit state functions. This scientific-managerial project of "rendering technical," then, connects particular sorts of knowledge with state power (Ferguson 1994; Mitchell 2002; Li 2007; Morgan & Orloff 2017).

Geographers, anthropologists, and other critical scholars have taken up Scott's insights as "starting point and provocation" for thinking in more nuanced ways about knowledge production and "how power works" (Li 2005, 383). This scholarship fits alongside a "new sociology of the state" that moves to de-fetishize "the" state as unitary and reified actor, instead approaching it as historically-produced, emergent effect, social relation, and process (Mitchell 1991; McCarthy 2007; Morgan & Orloff 2017; Loftus 2018). Within political ecology, work like Peluso's (1992) has emphasized Marxian political economic questions of resource access and use, and how state power over land and resources is exercised, justified, and contested. Others have gone back to Foucault, rethinking government itself a field of power and emphasizing the depoliticizing effects of bureaucratic and technocratic interventions (Li 2005; 2007; cf. Ferguson 1994). Efforts to link political ecology and science and technology studies (STS) (Braun & Castree 1998; Forsyth 2003; Goldman, et al. 2011; Lave 2012), as well as the recent emergence of critical physical geography (Lave, et al. 2018), have looked at the construction, use, and transmission of "expert" scientific knowledges, linked the practice of science to its broader social context, and highlighted contestation over what count as valid and valued understandings of the world.

Recent scholarship, largely from sociology and STS, explores the production and use of various forms of ignorance and "nonknowledge" across scientific, regulatory, and corporate contexts (Proctor & Schiebinger 2008; Kleinman & Suryanarayanan 2012; McGoey 2012a), further complicating the linkage between knowledge and social power. Knowledge and ignorance are reconceptualized not as opposites but rather as "poles of a continuum" (Heimer 2012, 19), with partial, inexact, uncertain, uneven, and provisional knowledges (cf. Böschen, et al. 2010, 785).[26] Kleinman and Suryanarayanan (2012) explore the relationship of these forms to regulatory and scientific cultures, which produce knowledge gaps – what Murphy (2006) calls "regimes of perceptibility" – along a spectrum of intentionality (cf. Sedell 2019). Persistent and intrinsic forms – *uncertainty* and *indeterminacy* – are pervasive across scientific and policy spheres (Brown & Damery 2016; Böschen, et al. 2010). These are particularly notable in ecology, where complexity and relationality "resist" simple understandings and reconfigurings – such insights, indeed, build on the same issues flagged by Scott around the gap between top-down state knowledge and a complex reality "intractib[le] to government" (Li 2007, 18). But nonknowledge can also be *produced*, as seen in the literature on agnotology (Murphy 2006; Pred 2007; Proctor & Schiebinger 2008). This "strategic

[26] McGoey notes the challenges of taxonomizing the unknown (2012a, 7), and indeed the boundaries of her own earlier typology of ignorance (2007, 229) appear uncertain.

ignorance" – a blindness that serves as complement and contrast to the limited vision of Scott's legibility – holds *utility* for certain actors, as disinformation, misrepresentation, and strategic omissions are fostered and deployed with great political effect (McGoey 2007; 2012a; 2012b; cf. Pred 2007; Oreskes & Conway 2010).

These lineages can be productively (and geographically) grounded in the western United States (cf. Martin, et al. 2019). By the classic view of "centralization, coherence, and autonomy… as intrinsic features of 'strong' states," the U.S. is a notable outlier: historically, it has been both powerful and decentralized (Morgan & Orloff 2017, 6, 14). In the West especially, power is often seen as dispersed, fragmented, and contested given the multi-layered, multi-agency, "patchwork" quality of governance. Here the relationship between environmental governance (and exploitation) and the production of the national state are closely tied. In recent history, such dynamics are further complicated by the interplay of neoliberalization (including reduced funding and staffing of federal agencies), and regional contestation (in the form of libertarian, anti-regulatory, and anti-federal attitudes).

2.1. Methods

The following is based on fieldwork conducted in Central Idaho and the surrounding region between 2015 and 2017. Arguments draw on ethnographic investigation, archival research, and document review, focusing here on the practices of IDFG and USFS agents from roughly the mid-1990s to the present, across large swathes of national forest land in Central Idaho managed as both livestock grazing lands and wolf habitat. I conducted over 40 semi-structured interviews with individuals from federal, state, and local government agencies, livestock producers, and environmental organizations, as well as participant observation in meetings, workshops, and range tours. Interviews were conducted with individuals across different levels and job foci – including five IDFG agents, five USFS agents across a handful of central Idaho districts, as well as 10 government employees across other related departments – and focused on mid-level career employees with programmatic responsibilities (not, notably, in charge of budgets or larger policy directions). All had training as biologists, ecologists, or range specialists, and had often worked in one or more agencies for many years. Archival research at the Idaho State Archives (Boise) and the Regional History Department of the Community Library (Ketchum) included oral histories from regional livestock producers, forest rangers, and game agents, and was supplemented by a review of scientific and agency literatures, including annual wolf management reports.

3. Navigating the ship of state

As social beings, state agents are embedded in conditions not of their choosing, yet also contribute to the production of socio-ecological reality through their practices (cf. Marx 1852; Latour 2005). In approaching the work of USFS and IDFG from a political ecological perspective, I emphasize how agents seek to manage the natures under their care while navigating the seas of socio-ecological complexity amid the threats of declining capacities and public contestation. I thus build and elaborate on previous scholarship (see section 2), while highlighting how changing conditions necessitate we complicate our arguments surrounding knowledge and power, state and science.

As noted above, environmental governance in the West takes place amid a complex terrain of multiple agencies and at times overlapping and even conflicting responsibilities (see figure 1). For purposes of the agencies and debates of concern here, key players include USFS and IDFG agents; ranchers and their livestock; and conservation nonprofits, also known as environmental

nongovernmental organizations (ENGOs). In many cases, the latter two groups roughly align with anti- and pro-wolf camps; environmentalists promote wolf return, while ranchers fear the real and perceived threats they pose.[27]

The growth of the U.S. environmental movement in the 1970s resulted in several pieces of landmark legislation (see figure 2), which collectively created a new regulatory landscape: establishing new sets of concerns and requirements governing how federal agencies made decisions affecting the environment, and authorizing citizens and nonprofit organizations to bring suit against the government to enforce these laws (MacCleery 2008; Fogleman 2017). For agencies charged with managing livestock grazing on public lands, NEPA and FLPMA have been particularly central, requiring a new system of environmental review. Since the advent of the environmental movement and especially since the 1990s, there has also been a growing campaign by several ENGOs to eliminate grazing from public lands: citing negative impacts on ecosystems and species, while fitting with desires by recreationists to minimize evidence of extractive uses on landscapes of recreation and consumption (cf. Neumann 1998; Brugger, et al. 2020).

Once common throughout North America, gray wolves had been virtually extirpated from the lower 48 states by the early 20th century. Per section 10(j) of the ESA, wolves were released into Central Idaho and Yellowstone National Park in 1995 and '96 as an "experimental, non-essential" population, part of a federal effort to return them to a portion of their former range and further reflecting the broader environmental policy shift since in the 1970s. From the wolves initially released (35 in Idaho: 15 in 1995, 20 in 1996), the population grew steadily in numbers and range, meeting recovery targets in 2000 and initiating the process of ESA delisting and devolution of management to the states.[28]

Although removal from the endangered species list ("delisting") is the stated goal of the ESA, it is a rarity and remains controversial. For wolves, the removal of federal protection meant increasingly flexible and frequent use of lethal control for "problem wolves" and the introduction of hunting seasons; a problem for pro-wolf forces who wanted to avoid a repetition of extermination, but a boon to those who saw rising wolf numbers as a threat to livestock production and game hunting. Following a decade of legal back-and-forth, wolf delisting passed in 2011 via federal budget bill rider.[29] This initiated a mandatory minimum 5-year federal oversight period, during which IDFG was tasked with documenting and maintaining the wolf population within state boundaries.

Conservation is frequently understood as a "biopolitical regime": through the demarcation and control of space, the making live and letting die of species, and the detection and regulation of biophysical process, managers deploy technologies of monitoring and control in ways that fit well with a Foucauldian view of legibility and biopolitics (Lorimer 2015; Adams 2017; cf. Scott 1998; Agamben 1998; Foucault 2007; 2008). Yet even as tools for environmental remote sensing and the tracking and surveillance of wildlife have seen dramatic advances (Arts, et al. 2015; Adams 2017, 2-4), environmental governance itself has not grown in vision and power. Instead, we must think

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[27] However, some ranchers and environmental organizations pursue coexistence between wolves and livestock on public lands through collaboration and the use of non-lethal management tools (see Stone, et al. 2017).

[28] Recovery goals for the Northern Rocky Mountain region were 30 breeding pairs with a metapopulation of 300 wolves for a period of 3 successive years, divided among and with genetic exchange between the three sub-regions of Northwest Montana, Greater Yellowstone, and Central Idaho (USFWS, 1987).

[29] Department of Defense and Full-Year Continuing Appropriations Act 2011 (Public Law 112-10, April 15, 2011); see also Perry (2012), who discusses the potentially significant precedent of this unconventional move.

through management practices, including technological choices and tools deployed, as *situated social practice*. By tracing the practices and discourse of IDFG and USFS agents around wolf and range management below, I hope to show how seemingly paradoxical responses – including the collection of less and/or less precise data – can be understood as "logical" amid the broader historical and political context in which agents act, but also how these choices in turn undercut agents' ability to effectively intervene around their charges.

Figure 2: Key environmental regulations

Acronym	Name	Date	Citation	Effects
NEPA	National Environmental Policy Act	1969	Public Law 91-190, 83 Stat. 852, January 1, 1970	Requires all executive federal agencies prepare environmental assessments (EAs) and environmental impact statements (EISs) on potential environmental effects of proposed agency actions.
ESA	Endangered Species Act	1973	Public Law 93-205, 87 Stat. 884, December 27, 1973	Charges the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to conserve and recover species and ecosystems on which they depend.
FLPMA	Federal Land Policy and Management Act	1976	Public Law 94-579, 90 Stat. 2743, October 21, 1976	Establishes policy guidelines for public lands management, protection, and development.
NFMA	National Forest Management Act	1976	Public Law 94-588, 90 Stat. 2949, October 22, 1976	Requires the U.S. Forest Service to implement systematic and interdisciplinary approach to timber resource management.
EAJA	Equal Access to Justice Act	1980	Public Law 96-481,94 Stat. 2325, October 21, 1980	Authorizes payment of attorney's fees to the prevailing party in successful legal action against the US government.

3.1. The choppy seas: complex systems and contrary aims

3.1.1. From timber extraction to ecosystem management

"*…[E]cosystems… are so complex that it is difficult or impossible to predict in advance the full implications of proposed management actions*"
– Doug MacCleery, "Re-inventing the United States Forest Service" (2008)

From the mid-20th century, management of federal forest lands begins a transition from the custodial and timber production roles outlined in the 1897 Organic Act toward concern with a broader set of non-extractive "uses, outputs and values" (MacCleery 2008).[30] Mobility and affluence in the post-war era led many to look to public lands as a site of recreation, and the 1960 Multiple-Use Sustained Yield Act gave the USFS authority and funding to administer lands not only for timber, range, and watershed, but also as wildlife habitat and for recreation.[31] In the 1970s these concerns underwent further expansion in response to advances in ecological science that highlighted complexity and "nonequilibrium" processes (May 1977; Picket, et al. 1992; Suding, et al. 2004), as

[30] The Forest Service Organic Administration Act of 1897 (16 U.S.C., June 4, 1897).

[31] The Multiple-Use Sustained-Yield Act of 1960 (Public Law 86–517, 74 Stat. 215, June 12, 1960).

well as an increasingly environmentally-minded public and regional economic and demographic transitions (Hines 2010; 2012; Bryson & Wyckoff 2010). The USFS's guiding philosophy and prioritization thus shifted from "get out the cut" (maximizing commodity timber production) to "ecosystem management" (cf. Hays 1959, 69-70; Sayre 2017).

The USFS's increasingly diverse "customer base," now including recreationists, environmentalists, as well as local communities still reliant on extractive industries, was reflected in the establishment of Idaho's Sawtooth National Recreation Area in 1972, which enshrined a commitment to "…natural, scenic, historic, pastoral, and fish and wildlife values and…recreation values."[32] Balancing the needs of ecosystems with the desires of diverse stakeholders, however, was easier said than done, especially when these were framed in mutually exclusive ways. To quote one agent, "…it's a real challenge with the Forest Service because… some people … say you need to graze more cattle, some people say you don't need to be grazing any."[33]

The combination of a new ecologically-informed approach and the demands of an increasingly diverse and vocal public pushed the Forest Service toward *adaptive management*, which stressed incomplete knowledge in the face of socio-ecological complexity and thus aimed to "learn by doing" while opening up to more collaborative approaches.[34] This new approach necessitated a "strong commitment to monitoring" as well as "considerable on-the-ground coordination," as certain forms of data became all the more important for navigating uncertainty, and stakeholder collaboration grounded work in local geographies and histories (Schreiber, et al. 2004, 178; MacCleery 2008).

3.1.2. Managing a moving target

> "*Conservation of wolves requires management… Without management, conservation is overcome by conflict*"
> – Idaho Wolf Conservation and Management Plan (ILWOC 2002, 4)

As the Northern Rocky Mountain wolf population met recovery goals beginning in 2000, attention turned to ESA delisting and devolution of management to the states. The U.S. Fish and Wildlife Service could propose delisting of regional wolf populations once recovery goals were met and it was "reasonably assured" that the population would not become threatened upon removal of protections (USFWS, et al. 2003, 30). Idaho's 2002 Wolf Conservation and Management Plan was deemed an "adequate" regulatory mechanism, with IDFG management to be tested under the 5-year oversight period beginning in 2011 (ILWOC 2002; USFWS, et al. 2004, 33, 37).[35]

Delisting minimum metrics were known as "15-150": 150 wolves and15 "breeding pairs" (defined as an adult male and female with two pups that survived until December 31st of that year) in the state. The 2002 plan notes that "[m]onitoring wolf populations is the cornerstone of a management program," and "best done with radio telemetry" (ILWOC 2002, 20). Standard practice by USFWS and IDFG involved helicopter darting, net-gunning, or leg-hold trapping for wolf capture, radio collaring (often with an aim of at least one collared wolf per pack), and subsequent

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[32] Sawtooth National Recreation Area Act (86 Statute 612, Public Law 92- 400, August 22, 1972).

[33] For similar findings and complementary narration based on USFS interviews, see Brugger et al. (2020).

[34] On adaptive management, see Holling 1978; Walters 1986; Walters & Holling 1990; Schreiber, et al. 2004.

[35] IDFG was kept out of the recovery and management process between 1994 and 2003 by a state legislature that rejected the legitimacy of the reintroduction action (Idaho Code §36-715). During this period, USFWS funds were funneled to the Nez Perce tribe, who played a central role in on-the-ground management and monitoring. It was only in anticipation of delisting that Idaho moved to allow IDFG to coordinate with the USFWS and implement the 2002 state plan (USFWS et al. 2000, 20; 2003, 36; 2004, 37; ILWOC 2002, 7).

monitoring via airplane (USFWS, et al. 2004, 25). IDFG biologists put in substantial effort to collect data to get the state from recovery to full delisting, "pulling out all the stops" during oversight with a year-round effort and full-time staff. While plans and oversight set quantitative targets as legal requirements, estimates became increasingly meaningless over time, and managers expressed cynicism around monitoring techniques: as one game manager noted, such methods were "hugely expensive to try to do…on any scale," and their quantitative targets "sure as hell…hard to prove."[36] Furthermore, "putting [radio] collars out" was "not the end goal," and felt like "a pacifier," "making people feel good" with the "illusion of control."

Although IDFG's mission is to "preserve, protect, and perpetuate" *all* wild animals in the state (IDFG 2015), it is financially tied to a constituency of hunters, fishers, and trappers – as informants put it, IDFG is "in the business of selling deer and elk," and "mandated under the legislature…to be responsive to [livestock] depredations." IDFG thus strives to balance ecological and socio-economic concerns, including "protection of livestock, state-managed big-game populations, wolf conservation, and funding" (USFWS, et al. 2003, 30; Fogleman 2017, 567). The 2002 plan, the official governing document for Idaho wolf management, makes zero reference to the benefits of wolf return except for a vague "national interest"; focus is instead placed on the added costs wolves represent: directly, through management, and for livestock and hunting interests (ILWOC 2002, 18, 22).[37] Furthermore, the IDFG commission is appointed by the governor – a position held during the period covered here by Butch Otter (R), who saw elk "as the state's wild livestock," and wanted to be "first in line" for a tag to kill a wolf.[38] The 2002 plan makes clear early on the state's opposition to having any wolves, but concedes that Idaho will manage "at recovery levels" to "prevent the wolves from being delisted" (ILWOC 2002, 4, 17, 18). This puts IDFG agents in a challenging position, charged with managing for population recovery by a government and amid constituencies opposed to wolf presence.

3.2. The whirlpool: doing more with less

3.2.1. Fewer boots on the ground

"*What happens generally is somebody retires, and then… we don't replace 'em… other people just sort of take over those duties*"
– Robin Garwood, USFS Wildlife Biologist

Those with the Forest Service recalled the importance of monitoring to assess environmental trends and plan interventions going back to the 1970s. Such work, however, was time and labor intensive: in backcountry Idaho, "monitoring" meant getting on horseback and travelling to rugged, remote ranges. Stakeholder collaboration, similarly important to adaptive management, required time: collecting public comment, building trust, and coming to agreement. Despite these needs, USFS budgets declined in real terms over the late 20th century, with disproportionate effects on field offices tasked with carrying out this work. Some districts in the Pacific Northwest saw full-time employment reductions of 30 to 50% between the 1990s and early 2000s, while emphasis on

[36] The "breeding pair" metric was particularly challenging, as pup death or other non-detection – not infrequent – would result in the "loss" of the breeding pair.

[37] Notably, the state plan refers to wolves' impact on native prey species as "depredation" (ILWOC 2002, 18), a term normally associated with animal take of human resources like crops and livestock.

[38] Quoted in Russell (2009).

"management efficiency" and the threat of outsourcing to the private sector made for additional workforce anxiety (cf. MacCleery 2008; Brugger, et al. 2020, 70).

Remaining career employees keep things workable and provide continuity, but they can only do so much. With 22 years of experience, one ranger said he knew the grazing allotments as well or better than his permittees, but the two local range technicians had each only been in the area for a year (and as one rancher put it, "you don't get to know the range in a year!"). One wildlife biologist explained how staff reduction resulted in increased workloads on those that remained; while agents "get used to" such conditions, they also recognize the consequences of underfunding and understaffing, as things "fall through the cracks," monitoring and permit administration goes undone (sometimes for years at a time), unauthorized uses go unchecked, and scientific questions remain unanswered (cf. Moir & Block 2001).

Community involvement in resource management can of course be beneficial: increasing buy-in, benefitting from experiential knowledge, tailoring practices to local conditions, and addressing historical problems of top-down state management for local people (Hays 1959; McCarthy 2007, 179-180; Charnley, et al. 2014). Yet shifts toward community-based resource management and collaborative decision-making take on a different tone in this context. Such efforts are simultaneously responses to a "crisis of legitimacy" in state forestry and might be viewed as an effort to "give the job to someone else" – a trend "uncomfortably complementary to the rise of neoliberalism" (McCarthy 2007, 179-181; cf. Harvey 2009). Faced with the pressing need to do more with less, stepping back from a leadership role has the advantage of leaning on resources and expertise beyond the agency. Yet this strategy has questionable long-term viability, as collaborative efforts themselves are hindered by cuts.

3.2.2. Monitoring on a budget

> "*Although [radio telemetry] worked well with initial small population sizes, these techniques are no longer appropriate or cost-effective given the current, much larger recovered population size and near-statewide distribution*"
> – Rocky Mountain Wolf Recovery 2003 Annual Report (USFWS, et al. 2004, 29)

Under USFWS oversight, wolves were carefully monitored using collaring and radio telemetry (see figure 3); for small populations, such methods were feasible and reliable, and produced important information on territory, density, dispersal, breeding status, pack size, and composition (Stenglein, et al. 2010, 1050). However, wolves are elusive and highly mobile, making them a challenge to track and "hard to count."[39] Rapid reproduction and territorial expansion created further challenges, with monitoring becoming increasingly less reliable, time-consuming, and cost-prohibitive, with multimillion-dollar annual budgets.[40] The specter of delisting thus raised questions about the feasibility of long-term wolf population monitoring, especially as the end of federal oversight would remove quantitative benchmarks and substantially reduce available federal resources. As early as 2003, then, Idaho began developing "less intensive" post-delisting protocols (USFWS, et al. 2002; 2004; Mitchell, et al. 2008; Bangs 2010).

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[39] A problem compounded by the rugged and remote terrain of Idaho, where aerial transects have limited utility given a lack of open habitat and inconsistent snow conditions (Ausband, et al. 2010, 2014).

[40] Even with a target of only one member of each pack collared, USFWS faced annual budgets for regional wolf recovery of over $2 million per year. The Idaho state plan shows monitoring costs at nearly a quarter of estimated budget (ILWOC 2002, 25); one agent recalled spending "tens of thousands of dollars a day sometimes," while another quoted a figure of "a million dollars a year on monitoring and management" during oversight.

In 2015, IDFG hired wildlife biologist Dr. David Ausband to adapt and implement more cost-effective methods of data collection appropriate to the ecological and regulatory context of full state management (Stenglein, et al. 2010; O'Connell 2015). Ausband's first effort, the "rendezvous site model," used wolf behavior and life history patterns to help researchers more efficiently find wolves without the use of radio collaring. A predictive habitat model locates probable sites of pack concentration (often wet meadows), which in turn guide on-the-ground survey efforts. Researchers confirm wolf presence at a site through visual inspection and/or howl surveys (in which pre-recorded wolf howls are played and responses noted), and collect hair and scat samples that are subjected to DNA analysis.

This approach reduced time and labor costs of population surveys while producing useful data on pack pedigree, distribution, and minimum counts (Ausband, et al. 2010; Stenglein, et al. 2010; Stansbury, et al. 2014). However, even with the cheapening of lab procedures (Stenglein, et al. 2010, 1057), this was still deemed too costly. Increasingly central to IDFG's wolf effort today, then, is the "patch occupancy model" (Ausband, et al. 2014; Mitchell, et al. 2016), in which data streams from rendezvous site visits, hunter surveys, and camera traps are put into an algorithmic framework that produces estimates on presence and trend.[41]

Figure 3: Wolf monitoring technologies and transitions

Responsible party	Dates	Technologies employed	Data produced
USFWS (federal)	1995 – 2011*	Radio collaring and telemetry	Population estimates, pack location and composition
IDFG (state)	2011 – 2016 (oversight period)	Radio collaring and telemetry	Population estimates, pack location and composition
IDFG (state)	2016 – present	Rendezvous site model	Minimum population estimates, pack distribution, composition, and pedigree
		Patch occupancy model	Presence and trend estimates

**(See note 35, above)*

These modeling techniques reflect IDFG concern with *population* – presence, persistence, and impacts – rather than the specific *number* of individuals or packs. As noted above, complex dynamics and wide-ranging behavior hinder easy tracking and quantification of wolves, yet many environmental organizations still base lawsuits and contestation of management practices on numbers. While concerns around over- and under-reporting of populations and the effects of human-caused mortality are important (Treves, et al. 2017; Darimont, et al. 2018), framings like that of Creel, et al. – "*[c]learly defined, quantitative policy goals are needed for science-based evaluation*" – conflate scientific rigor with quantification, seem to ignore the intrinsic uncertainties of detection and modeling, and run at odds with the concerns and practices of managers (2015, 1475, emphasis in the original; cf. Porter 1995).

Use of modeling *is* complicated, however, by the introduction of annual wolf hunting seasons. While "harvest" appears contrary to maintaining a viable population, hunting seasons were a central

[41] Research is currently underway to improve these techniques "within an adaptive management framework" (Mitchell, et al. 2016, 3-4), with similar approaches taken up in Finland (Granroth-Wilding, et al. 2017) and the Iberian Peninsula (López-Bao, et al. 2018).

pillar of management plans developed in Idaho, Montana, and Wyoming (Gude, et al. 2012, 109); Idaho expressed its intent early on to transition wolves to a "big game species" managed like any other (ILWOC 2002, 4). IDFG managers are quick to point out that hunting has "worked remarkably well," success rates remain low, and the practice brings wolves closer in line with other species managed off harvest data (including black bears and mountain lions, both of which have legal hunting seasons in the state). However, the effects of human "take" on wolf demography remain poorly understood; and, crucially, modeling appears to lose efficacy with increasing mortality rates (Mitchell, et al. 2008, 883, 888; Ausband, et al. 2010, 1048; Gude, et al. 2012).

There is already no easy conversion from presence to population count, with estimated state numbers based on significant assumptions and biases resulting from the interplay of technology, species behavior, and geography: "…we can't say how biased that estimate [of average pack size] is, because it's based on packs that we can monitor well enough to know how many wolves there are at the end of the year… packs we can get to most easily." Studies and experience show that wolf populations can withstand substantial human caused mortality without declining (ILWOC 2002, 10; Bangs, 2010), but IDFG biologists admit that "we don't know" the number below which wolves will no longer have a self-sustaining population (cf. Darimont, et al. 2018; Creel, et al. 2015).[42]

Implementation of hunting as a social, rather than ecological, intervention, however, has been relatively successful: both reported livestock depredation incidents and social opposition to wolves are said to have declined since 2008, attributed by many to the inception of hunting seasons (cf. ILWOC 2002, 22).[43] Yet the tension between maintaining a viable population along with the support of constituencies with contrary motivations has IDFG walking a razor's edge – and, increasingly, without the data to inform management choices. While wolf numbers are not going into free-fall, "success" may be due more to wolf resilience and Idaho topography – a "rapidly growing population with a protected core" (Mitchell, et al. 2008, 889-890) – than with the soundness of their current approach.

3.3. The monster: legal and political pressure

3.3.1. Legal challenges and process gridlock

> "*Too often, the Forest Service is so busy meeting procedural requirements, such as preparing voluminous plans, studies, and associated documentation, that it has trouble fulfilling its historic mission: to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations. Too frequently, the paralysis results in catastrophe.*"
> – "The Process Predicament" (USFS 2002)

Although created in response to legitimate environmental concerns, implementation of NEPA, FLPMA, and related legislation are often described by agents as adding to the workload, resulting in "process gridlock" and inefficiencies in decision-making (MacCleery 2008). Regulation creates new demands on time and attention – recall the monitoring requirements of adaptive management (3.1.1) – but the threat of lawsuits pushes agencies to add protective redundancy to documentation ("overkill") at the expense of other management responsibilities (Karkkainen 2002; USFS 2002;

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[42] While there are currently none of the "old bars" of minimum wolf population numbers in Idaho, the USFWS can be petitioned at any time to investigate wolf population status. This raises an interesting legal question (beyond the scope of this paper): if the USFWS wants IDFG to "show them their numbers," but there is no federal funding for monitoring in such a fashion, what is the state's obligation?

[43] Verification of these claims would require significant further research.

Brugger, et al. 2020). Agents point to binders full of biological opinions, impact statements, and grazing rules, but say that these do little to inform practical decision-making.

ENGO lawsuits are often based around regulations that may have become disconnected from on-the-ground realities: grazing season on- and off-dates are fixed, yet cannot reflect seasonal and annual variation of pasture condition; AUMs (animal unit months – a measure of pasture usage) are based on an abstraction that ignores individual grazer variability as well as changes in the breed. USFS agents noted that while putting GPS collars on livestock might help them monitor impacts and respond to problems, doing so would also open the agency and livestock operators to litigation if animals stepped over the often-arbitrary boundaries associated with allotment grazing plans. Suits can even be brought for failure to meet deadlines (Fogleman 2017, 572), common given capacity gaps and exacerbated by litigation itself.

Livestock producers expressed both frustration and sympathy: "…the agencies have really dug themselves a hole. They've come up with so many regulations, they can't keep up with them"; "…they don't have time. All they're doing is answering…questions and trying to get things done so they can comply with all the regulations that they made. And they've cut their budgets so where they don't have too many personnel." While they admitted that agents were often making their best effort, ranchers saw these as misdirected: rangers were "bogged in paperwork" rather than "on the range"; regulations could be "absurd" and disconnected from ecological and geographical realities; and environmental organizations used these rules "to beat them" in the legal realm.

Since the EAJA, many environmental organizations have turned litigious, funneling fundraising into legal teams and using lawsuits as a primary tool for pushing change. Some ENGOs aim to eliminate public lands grazing entirely, explicitly framing livestock as incompatible with conservation and an illegitimate use of public land (often as "welfare ranching") (Wuerthner & Matteson 2002; cf. Rowley 1985; Brugger, et al. 2020).[44] While right-wing claims that ENGOs are "running a business" through litigation (i.e. profiting from lawsuits) are inaccurate and overplayed, litigious environmentalism has resulted in skepticism, distrust, and sometimes extreme animosity (Baier 2016; Fogleman 2017).

Environmental governance has long embodied a "tension between the centralizing tendencies of system and expertise on the one hand and decentralization and localism on the other" (Hays 1959). MacCleery (2008) connects "process gridlock" to a disconnect between the management and regulatory apparatus – i.e. between natural resource agencies and the courts – and the failure of the latter to embrace adaptive management. Managers find themselves trapped "between powerful interest groups and inflexible legislation" (Treves & Karanth 2003, 1496), while interpretation of environmental law is left in the hands of judges rather than scientists or to political debate. Too often this has resulted in the "blunt instrument" of injunction and *further* NEPA assessment, continuing the cycle of dysfunction (MacCleery 2008; cf. USFWS, et al. 2003, 32; Brugger et al., 2020, 69).

3.3.2. Wolves' symbolic importance

"*The human dimension is ultimately the most important component in management of this species*"
– Idaho Wolf Conservation and Management Plan (ILWOC 2002, 21)

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[44] Such views have been noted and critiqued by many environmental historians and political ecologists on the bases of both ecological science and the often-obscured socio-environmental history of place (e.g. Peluso 1992; 1993; Cronon 1995; Neumann 1998; Kosek 2006; Sayre 2017).

Reintroduced wolves were "high profile" from the beginning, revered by some and violently opposed by others. Although competition with humans – particularly around livestock depredation – is often cited as the source of contention, controversy far exceeds wolves' material and economic impacts. As former USFWS wolf recovery coordinator Ed Bangs puts it, "we debate human values through them": both pro- and anti-wolf stakeholders enroll the animal in broader political struggles, drawing on the complex symbolic register of the wolf. Thus regardless of techniques used or the number of wolves in the state, some group was always upset. As one game manager explained:

> *"[We] get both sides! 'You're soft on wolves, you're not killing wolves, wolves are killing my livestock, wolves have ruined my hunting opportunities, wolves have ruined my outfitting business, you guys aren't doing enough, you're to blame, you caused them to come here, you said it was great, you're all just a bunch of environmentalists, and would like to use wolves so that you can cancel hunting seasons and take our guns away…'*
>
> *And at the same time, the other extreme… 'wolves are special and they're a religious symbol and they should never be killed for any reason, we should have a lot of them, we should have them everywhere and we should evacuate all people from wilderness permanently.'"*

While the aim of state and federal managers was to get wolves recovered and delisted, efforts to "not put 'em on a pedestal" have thus far been unsuccessful; wolf management remains "a special case" subject to intense social scrutiny and extreme public opinion. IDFG agents note their inability to manage wolves using methods used for other species, or from an ecosystemic (as opposed to single-species) approach, while scholars have noted the downsides of a "public involvement" that undermines the principles of adaptive management itself (e.g. Treves & Karanth, 2003, 1496). IDFG agents expressed cynicism over input that felt disconnected from realities on the ground (including opposition to radio collaring wolves in the wrong times and places, or the removal of problem wolves as per the state management plan) (ILWOC 2002; Chaney 2016; 2017).

Polarization has broader political consequences as well. The back-and-forth leading up to delisting is often cited as environmentalists "going back on the deal," a process through which, Bangs notes, "we taught hunters to hate wolves" (cf. USFWS, et al. 2003, 31). While data on wolf location once helped coexistence collaboratives avoid livestock depredation and reduce conflict, social and legal controversy later made IDFG agents hesitant to share that information given the possibility of targeted killings (cf. USFWS, et al. 2000, 15, 18; 2004, 36–37). Thus while wolf recovery has been "remarkably successful" from a population ecology standpoint – one of the great conservation achievements of the 20th century (Mech 1995) – socio-political controversy creates what one IDFG manager called "the most challenging aspect of wildlife management right now."

4. Thinking through illegibility

> "*You just kinda have to deal with it… otherwise you just bury your head in the sand and hope for the best*"
> – Kurt Nelson, USFS District Ranger

4.1. A limited vision

To return to the conceit with which we began, USFS and IDFG agents are sailors on the choppy seas of socio-ecological complexity. As environmental agencies have internalized advances in ecological science and confronted the socio-political challenges of environmental governance, they have sought to navigate these new seas through adaptive management and collaboration. However, monitoring, learning-based approaches, and stakeholder collaboration require substantial outlay of

labor time and resources. These have been undermined by cuts to capacities and political pressures – the whirlpool and the monster – in a spiraling feedback loop: cuts lead to failures to accomplish aims and comply with regulations, resulting in lawsuits that further hinder productive agency practice and leave adaptive management an "unrealized promise" (MacCleery 2008; cf. Moir & Block 2001; Schreiber, et al. 2004).

Complexity and indeterminacy are increasingly recognized as pervasive in scientific research and decision-making processes, especially with non-linear and intractable "wicked problems" like those described above (Rittel & Webber 1973). Environmental uncertainty presents a certain "intractability to government" (Li 2007, 18), which informs Scott's central argument (1998): modernist schemes have frequently *failed*, with significant environmental and social impacts. But intractability is more than a result of complexity and indeterminacy. The USFS is asked to resolve land use questions amid a lack of societal consensus on the proper use of public lands. IDFG seeks to maintain wolf populations while dodging opposition from all sides (as wolf biologists often say, "everybody hates managers"). Collaborative efforts around range management and nonlethal coexistence struggle amid polarization and limited funding.[45] And while collaboration can increase local buy-in and adaptability – as one rancher put it, "trust creates flexibility" – it is "hard to be adaptive if everything has to be sued in court."

As arbiters of competing social claims, agencies cannot please everyone (Hays 1959, 58). To quote a game manager with over 25 years' experience, "it comes down to, yeah we're managing for multiple uses, and… multiple species, and different desired outcomes from an enormous range of constituents… they want to see different things. And the difficult part lies in… desires that are completely incompatible with each other." Yet faced with the Scylla and Charybdis of reduced capacities and social controversy, agents take on a defensive position, "keeping afloat" amid frustration and "muddling along" from crisis to crisis. Usage of one technology or another, decisions on whether and how to measure a given process or population, and the margins of error inherent to modeling produce different forms of knowledge and nonknowledge. Ambiguity, conflicting facts, and technological blind-spots emerge, as certain research does not get done and certain questions cannot be answered.

Scott argues that techniques of legibility make natures and societies "susceptible to careful measurement and calculation" by bringing *certain* aspects of an otherwise "complex and unwieldy reality" into sharper focus and stronger control (1998, 11). In so doing, however, these create their own form of *blindness*: abstracting away consequential complexity and "opening a gap between events on the ground and their official representations" (Sayre 2002, 169; cf. Porter 1995; Li 2005, 388-390). But the seemingly irrational outcome of nonknowledge seen here is not a result of the failure to capture socio-ecological complexity; rather, it is a result of the undermining of agents' ability to intervene and collaborate around complicated and controversial issues – a different form of "limited vision" that I term *illegibility*.

4.2. Illegibility as political strategy

What is the political intelligibility of unintelligibility? Especially as the state appears to set agency priorities with one hand while undercutting its ability to pursue those priorities with the other (cf. Brugger, et al. 2020, 73), how do we account for the perpetuation of this seeming paradox? McGoey

[45] Nonlethal management, generally more labor- and knowledge-intensive, may be less attractive to strapped agencies, but is further undercut by endorsement of lethal control by the same agency (cf. ILWOC 2002, 19).

argues that efforts to know *less* should be understood not as a breakdown in rationality, but rather as "indicative of a rational strategy itself" (2007, 228). Through "practices of obfuscation" (2012b, 555), and "knowing the *least* amount possible" (2012a, 3, emphasis in the original), organizations and individuals manage risks and exonerate themselves from blame. The generation of ignorance and imprecision takes on a *purposefulness*, then, whether "intentional" or not (cf. Murphy 2006; Pred 2007).

As agencies have moved toward prioritizing ecological concerns (and increasingly defined these as the basis of their authority) (cf. Kosek 2006, 68), they have created challenges for other state actors and interests. Uncertainty does not easily translate into policy and law, which continue to seek quantification, prediction, and "objectivity" (Porter 1995; Robertson 2006). Ecological science may also raise concerns and elicit policy directions inimical to other priorities; an ecosystemic approach might be seen as too inconvenient, costly, or contrary to other aims (such as private accumulation). Yet redirecting practices away from ecological aims has become increasingly difficult to do on the basis of science and "the facts," particularly as scientific and legal expertise increasingly extend beyond the state.

By decreasing the ability to determine public priorities (through collaboration) or carry out environmental sustainability (through adaptive management), illegibility "from above" appears bound up with a reworking of relations between the state and science: reducing responsibility to the public and undermining the very means and logic of contestation. *Undermining* agents' ability to carry out certain tasks – resulting in the production of less and/or less precise data – reduces the state's vision of, and thereby responsibility around, ecosystemic priorities (cf. McGoey 2007; 2012a; 2012b). Cuts take agencies out of public debates, remove them as a terrain of political struggle, and provide cover for the reorientation of priorities.[46] Illegibility becomes a means to contain political challenge, as perhaps the latest incarnation of the neoliberal turn; to mix metaphors, cuts become a means to "starve the beast." Beyond the political demobilization of rendering technical, this is a further deflection and deniability: of not knowing, of "seeing no evil" (cf. Ferguson 1994; Li 2007; McGoey 2007, 2012a, 2012b).[47]

The current administration's "proclivity to dismiss evidence-based claims," in which opposition and critique become "fake news" while "alternative facts" justify pre-decided policy directions (Dillon, et al. 2019, 545, 547), can be seen, then, as the continuation of a longer historical arc (cf. Pred 2007). Illegibility provides cover for and the dismantling of regulation and publicly-funded research and for corporate capture of regulatory agencies (often by companies with long histories of manufacturing doubt) (cf. Proctor & Schiebinger 2008; Oreskes & Conway 2010; Dillon, et al. 2019).[48] Li argues for "a continuum" between coercive, authoritarian government and Foucauldian, governmentality-style approaches (2005, 387); perhaps what we see here then is a swing of the pendulum, as the germ of anti-democratic politics has grown bolder and more boisterous, from "low-key fascism" into full-blown authoritarianism (Pred 2007, 376; McCarthy 2019).

4.3. Illegibility as defensive adaptation

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[46] This is seen at the national level in reduction of agency staff and financial support for government science (Alemany 2017), as well as the removal of resources on climate change from the EPA's website (Dillon, et al. 2019).

[47] Akin, perhaps, to Odysseus' command that his sailors stop their ears with wax to avoid the sirens' temptation?

[48] It is worth noting similar moves present among other discourses of popular skepticism, from anti-vaxxers to anti-grazers, who seek not scientific consensus but to assert their own "truth" (cf. O'Neill 2007, 159-163).

In the American West, neoliberalization layers atop longer-standing anti-federal and anti-regulatory sentiment, with budget cuts occurring in conjunction with revived efforts for deregulation, the privatization of public lands, and attacks on the ESA.[49] Agents charged with the management of politically-significant species and environments confront a pressing need to do more with less. Technologies like Ausband's modeling (3.2.2) facilitate the gathering of data "better, faster, and cheaper," and even assist with intervention and collaboration toward the avoidance of conflict (Adam, 2017, 7-9; Ausband, et al. 2010, 1047). Yet far more important than the technologies in and of themselves are the social relations and context in which technologies are adopted, used, and governed.[50]

Much of the literature from science and technology studies stresses the power of scientists and state agents (although cf. Robertson 2006). In contrast, I have argued that states and their agents produce and deploy both knowledge *and* ignorance in complex ways, with scientists and managers subject to structural pressures and constraints. Illegibility here becomes not a consolidation or source of power, but a symptom of weakness, distinguishing this analysis from other work on agnotology (Proctor & Schiebinger 2008; Oreskes & Conway 2010), and complicating McGoey's analysis of ignorance as institutional resource (2012b). By emphasizing the situatedness of agents' choices (cf. Haraway 1988; Pred 2007), we highlight the on-the-ground challenges of living and working amid such conditions – to quote a former Forest agent, "it is not fun going through appeals… litigation…congressional inquiries, going through defensive type posturing to do your job."

As Li notes, depoliticization is a project, not a *fait accompli* (2007, 10); even as agents' practices serve to reproduce structures of power and knowledge, contestation, resistance, and reversals from within the state may still be possible (cf. Mitchell 1991, 93; Ferguson 1994, 18; Li 2005, 385). McGoey provocatively notes that "[t]he creative use of ignorance has been key to the regulator's survival" (2007, 232; cf. 2012a, 12). As agents make decisions amid circumstances not of their own choosing, might we conceive of illegibility in part, too, as a form of "resistance," an inversion of Scott's "weapons of the weak" (1985) here wielded by state agents themselves?

5. Over the horizon

"*If it's worth doing, then it's worth doing – but it's gonna cost money*"
– Kurt Nelson, USFS District Ranger

Odysseus ultimately steers toward the monster Scylla, losing only a few sailors rather than his entire ship to the whirlpool Charybdis. Similarly, although politicization and litigation are serious problems for environmental governance, defunding represents the greater threat. With science under political attack and governments continuing to push tax cuts and privatization in the face of looming socio-ecological challenges, agencies become potential sites of contestation and struggle, opening opportunities for new alliances, practices, and directions (cf. Charnley, et al., 2014; Dillon, et al.

[49] Indeed, Scott's own read of bureaucratic power and its failures at times fits too easily with anti-state and anti-regulatory arguments; it is not far from Scott to Hayek (cf. Tilly 1999).

[50] While the coercive potential of such technologies has made them an object of critical scholarship and justice concerns (Adams 2017; cf. Peluso 1993), such a narrative can be critiqued for its implicit correspondence between knowledge (here, mediated via technology) and power. Not only, following Arts et al., should we avoid "hypes, techno-fix thinking, good news narratives and unverified assumptions" (2015, S661), but we should also question gloom-and-doom narratives, functionalist thinking, and the simple conflation of legibility and power. Missing from these is a conceptualization of technological choices as situated social practice.

2019). As of this writing, IDFG is finalizing a new wolf management plan with clearer operational guidance and criteria around population targets, while the USFS is working to establish a new Forest Management Plan for 2019 – revising regulations, striking a balance among multiple uses, and streamlining NEPA decision-making processes (USFS 2017). Such efforts, however, can only go so far without adequate support.

As environmental demands increase – with increasingly complex challenges of coexistence and climate change-related crises – muddling along, reliance on the extra effort of individual agents, and literally papering over contradictions are all non-solutions. Flawed though efforts have been over the years (cf. Hays 1959), environmental governance is not improved by cuts to state capacities; this is the model of neoliberal austerity, in which programs are defunded until they fail. USFS and IDFG agents face significant structural challenges that undercut their ability to carry out their responsibilities, while failures add fuel to those questioning their legitimacy and raise the specter of abrogation of responsibility through public lands transfer or further ESA delisting.

We should follow Scott and others from STS in questioning assumptions of legibility, quantification, and abstraction in the face of socio-ecological complexity. But against the idea that "ignorance is bliss," we should see illegibility not as the resolution of these contradictions but as symptom and source of dysfunction. State agents navigate seas not of their own choosing, fraught with indeterminacy, logistical limitations, unrealistic expectations, and socio-political conflict. Amid the resulting combination of frustration, cynicism, and pragmatism, a certain measure of performed ignorance provides a reprieve from scrutiny and blame, allowing agents to keep their heads down and "get on with their work" (Heimer 2012, 35). McGoey shows how the breakdown of making legible contains within it a rational strategy for navigating antithetical demands, while encouraging us to remember both "the at times systematic absurdity of bureaucracy" as well as the tacit logics behind seemingly illogical acts (2007, 217, 230–231).

I have sought here to situate both data and its production (Dillon, et al. 2019, 549), and in so doing stress how the limits of knowledge production are not technologically determined but political and socially produced. By emphasizing the situated social practice of government agents charged with management of controversial natures – those embattled sailors caught between Scylla and Charybdis – we can better understand the seemingly illogical and dysfunctional results. Future research might build on these insights while raising a consideration of "worlds otherwise" (Brugger, et al. 2019, 74), of how things might be different. At the very least, analysis of illegibility should further complicate views of bureaucratic rationality while painting a more complex relationship between knowledge (and ignorance) and power.

5. The Dogs of War

"Cry 'Havoc!,' and let slip the dogs of war."
– William Shakespeare, *Julius Caesar*, Act 3, Scene 1, line 273

The final body chapter included below is intended for submission to the *Annals of the American Association of Geographers* later this year. In it I return to one of the central questions of the dissertation: the scale and durability of anti-wolf opposition 25 years after reintroduction, or what I have termed the "wolf question." I build here on the work of the previous two chapters, focusing now on *political polarization* as one of the key obstacles to collaborative coexistence and adaptive environmental governance. I show how a political ecology-informed approach can help us to better understand this emblematic instance of human-wildlife conflict while pointing toward an alternative environmental politics – "connections other than violence… across the species barrier" (Greenough 2003, 187) through a more convivial conservation (Büscher & Fletcher 2019).

My approach to the wolf question – that "surplus antagonism" (Ortner 2006), seemingly disproportionate to wolves' own material impacts – is one that considers it from a deeply *geographical* perspective. In the paper, I make two primary inquiries: first, what is the broader socio-environmental context into which wolves return? And second, what do wolves "bring with them" as they are enrolled within cultural-political struggles? Through historical and discursive analysis (which frequently dips into the rich imagery surrounding wolf issues), I explore this instance of rewilding as a terrain for questions of *place* and *politics* in the region.

I first read the wolf question vis-à-vis the "New West," focusing on the socio-economic landscapes to which wolves return. Conflict is situated amid regional transformations, including the pressures of rural gentrification, anxieties surrounding extractive industry decline, and concerns over continued access to land as a means of local livelihood. I argue that risk perception and response – humans' own "landscape of fear" – is situated amid and mediated through these longer histories and structural pressures. Wolves are thus more than an agricultural pest, with "acceptable losses" of livestock to depredation bound up with political contestation over regional futures.

I next embed wolf conflict within a longer history of struggle over the public range: from the turn of the last century, through Sagebrush Rebellions and "radical" environmentalism of the 1980s and 1990s, into the rural populism of the 21st. Wolves, along with many other wildlife species, are deployed within political-legal struggles over the appropriate use of public lands. An ideology of wilderness (Cronon 1995; Neumann 1998) is enacted through the litigious strategies of groups like Western Watersheds Project – an ENGO, also based in the Wood River Valley, but which promotes the removal of ranching and livestock from the region rather than coexistence. Environmentalists' use of charismatic species as part of their campaigns, I argue, plays into the hands of right wing populists and makes wolves a target for violent reaction – as with the infamous "shoot, shovel, and shut up" – when locals come to see wolves as a vanguard of dispossession.

In contextualizing and situating this conflict within a broader set of social relations, I draw on the "Berkeley School" of political ecology as well as insights from environmental history and moral economy. My analysis highlights the inextricably material and meaningful quality of wolf conflict, which is simultaneously both very much about wolves and also not at all about wolves. I make moves herein (which I hope to extend in the future) toward an E. P. Thompson-inspired animal geography (Thompson 1975) – looking to how animals become both battleground and victims of struggles over political economic transformations – as well as Polanyian moral economy insights around "anti-environmental" reaction (Polanyi 1944; Fraser 2013; cf. Peluso 1992; Jacoby 2003).

In sum, I show how the wolf question is bound up with a broader set of challenges, from rural populism to the politics of rewilding and land use change in the Anthropocene. A political ecology approach helps illuminate the coproduction of these issues, as well as the problems of a contemporary environmentalism that feeds polarization and backlash to the detriment of animals themselves. I thus highlight the need for an alternative environmentalism, one that engages the concerns of local people with an alternative political narrative and path toward coexistence, which I explore in the conclusion to the dissertation.

The Dogs of War: A Political Ecology of the Wolf Question

Jeff Vance Martin. In preparation.

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1. The wolf question

Reintroduction of gray wolves (*Canis lupus*) to Yellowstone National Park and Central Idaho in 1995 and 1996 has been hailed as one of the great conservation successes of the 20th century and a triumph of *rewilding*, an emerging discourse and set of practices promoting restoration of ecosystemic processes and functions at the landscape scale (Mech 1995; Soulé & Noss 1998; Roman 2011; Randall 2020). Socio-political tensions surrounding wolf return, however, simultaneously make for a key instance of *human-wildlife conflict*, an increasingly prominent and intractable concern for policymakers, managers, and the diverse stakeholders who share space with megafauna species around the world (Woodroffe, et al. 2005; Dickman 2010; Frank, et al. 2019). Anti-wolf sentiments in the American West are largely framed around the threat of depredation on livestock and wild game species, yet social reaction appears to far exceed wolves' material impacts – a *surplus antagonism* (Ortner 2006) that persists 25 after since reintroduction and despite the development and deployment of compensation measures and coexistence strategies (Young, et al. 2015; Stone, et al. 2017; Martin, in press B).

Wolf return to the Northern Rocky Mountains has reversed a history of local and federal campaigns conducted over the 19th and early 20th centuries, of shooting, trapping, and poisoning that nearly exterminated wolves from the lower 48 states (Fischer 1995; Coleman 2009). Restoration of these predators brings with it landscape-level ecological changes through trophic cascade effects (Ripple & Beschta 2004; 2005; 2012), but also anxieties among rural populations who see wolf recovery as a threat to their livelihoods, culture, and sovereignty (Nie 2003; Clark, et al. 2005). What I term the *wolf question* – the long-standing, polarized socio-political conflict surrounding gray wolves in the American West – is the sort of challenge that has driven wildlife ecologists and managers to call for social science attention to conservation's "human dimensions" (Baruch-Mordo, et al. 2009; Bruskotter & Shelby 2010; Frank, et al. 2019).

Dominant narratives of wolf conflict frame opposition as rooted in historical fears and cultural identification, or else in material tensions between livelihoods and conservation. At best these are addressed through campaigns of environmental education – often downplaying wolf impacts as minor or negligible – or by focusing on depredation as a biosecurity concern, emphasizing economic compensation and technocratic interventions (Stone, et al. 2017; Martin, in press B; cf. Buller 2008). At worst, as I will explore below, those more antagonistic to ranching will highlight the backwardness and incompatibility of resource users and the folly of shared landscapes. My aim here, in contrast, is to present a political ecology of the wolf question (Blaikie & Brookfield 1987; Robbins 2004; Neumann 2005; Perreault, et al. 2015) – extending a valuable lineage of scholarship on the American West (e.g. McCarthy 2002; Walker 2003; see Schroeder, et al. 2006; Martin, et al. 2019) while drawing on insights from people and parks scholarship (Neumann 1998; West, et al. 2006; Adams & Hutton 2007) and earlier work around moral economy and rural resistance (Marx 1842; Thompson 1975; Scott 1976).

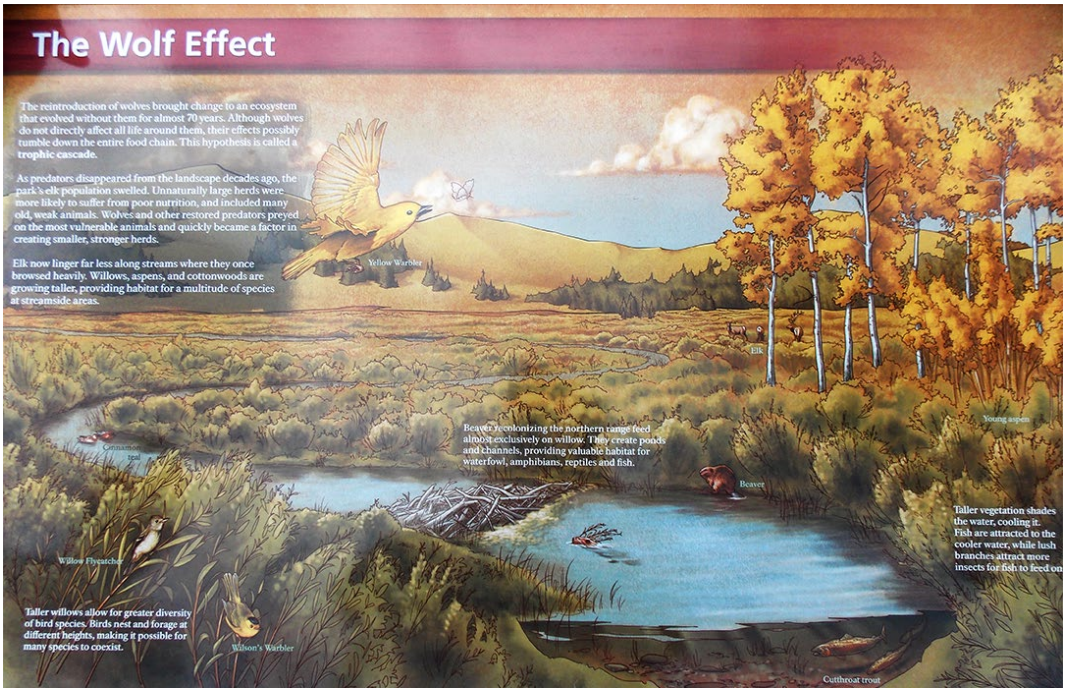
Based in ethnographic and archival research conducted in Central Idaho and the surrounding region between 2015 and 2017, I unpack wolves' cultural-symbolic associations and the at-times "fanatical" support and opposition surrounding wolves (Robbins, et al. 2014, 185) by situating conflict amid broader regional processes. In such a read, wolves are always and unavoidably social

and political (Robbins & Moore 2013); my aim is to better *understand* that politicization – its origins, forms, transformations, and reproduction over time – in order to move away from a consideration of wolf as agricultural pest to a relational understanding of the conflict as overdetermined by regional dynamics and struggles. These include pressures and anxieties bound up with so-called "New West" transitions (Baden & Snow 1997; Winkler, et al. 2007; Hines 2010) as well as deeply-rooted struggles over public lands governance (Hays 1959; Rowley 1985; Sayre 2017). I contend that anti-wolf reaction is thus not some holdover of "Old West" attitudes, but rather a comportment reproduced in the present, as wolves' symbolic connection to wilderness facilitates their deployment in struggles over public lands use and regional futures, in turn making them a convenient scapegoat and target for populist reaction (cf. Greenough 2003; Clark, et al. 2005).

In what follows, I first read the wolf question together with insights from a "big tent" political ecology, including critical scholarship on "fortress conservation" as well as an older lineage around moral economy. I then explore the regional context into which wolves return, including New West transformations and pressures of rural gentrification. From here I turn to a consideration of wolf deployment amid long-standing legal-political struggles over regional land use, including how such political enrollment makes wolves a target for social opposition and violence. I conclude by highlighting how such environmental politics run counter to on-the-ground efforts at coexistence and the wellbeing of wolves themselves, pointing toward the need for an alternative environmental politics in the region.

Figure 1: The "Yellowstone Story"

According to the oft-shared account of wolf reintroduction, the return of *Canis lupus* to Yellowstone National Park after nearly 70 years of absence resulted in trophic cascade effects on the broader ecosystem, including elk behavior changes, riverbank stabilization, and reforestation (Ripple & Beschta 2012; Monbiot 2014. Subsequent research has complicated this framing and raised questions about the conservation value of repeating this too-easy tale (Mech 2012; Middleton 2014; Haswell, et al. 2017).



An informational placard in Lamar Valley, Yellowstone.

> [Text reads: "The reintroduction of wolves brought change to an ecosystem that evolved without them for almost 70 years. Although wolves do not directly affect all life around them, their effects possibly tumble down the entire food chain. This hypothesis is called a trophic cascade."
>
> "As predators disappeared from the landscape decades ago, the park's elk population swelled. Unnaturally large herds were more likely to suffer from poor nutrition, and included many old, weak animals. Wolves and other restored predators preyed on the most vulnerable animals and quickly became a factor in creating smaller, stronger herds."
>
> "Elk now linger far less along streams where they once browsed heavily. Willows, aspens, and cottonwoods are growing taller, providing habitat for a multitude of species at streamside areas."
>
> "Taller willows allow for greater diversity of bird species. Birds nest and forage at different heights, making it possible for many species to coexist."
>
> "Beaver recolonizing the northern range feed almost exclusively on willow. They create ponds and channels, providing valuable habitat for waterfowl, amphibians, reptiles and fish."
>
> "Taller vegetation shades the water, cooling it. Fish are attracted to the cooler water, while lush branches attract more insects for fish to feed on."

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2. Rewilding and its discontents

Gray wolf reintroduction was the culmination of decades of collaborative efforts by environmental organizations, tribes, and government agencies to restore the species to a portion of its former range (YNP, n.d.; Fischer 1995; Robbins, et al. 2014). This return has been invoked as an emblematic instance of rewilding, a discourse and model for conservation in the Anthropocene based on the (re)introduction of megafauna keystone species. Soulé and Noss's foundational vision of landscape-level restoration invokes the "Yellowstone Story" as a key touchstone (1998; figure 1, above), evocatively related in George Monbiot's *How Wolves Change Rivers* (2014).[51] Although the concept has proliferated widely, from de-extinction to the pro-biotic (e.g. Donlan, et al. 2006; Lorimer 2017), rewilding retains coherence as a hopeful and at times spectacular alternative to a "post-wild" world of environmental decline, stressing "wild experiments" and non-human autonomy (Lorimer & Driessen 2013; Sandom, et al. 2013; Jørgensen 2015; Carey 2016; cf. Marris 2011; Monbiot 2013).

Yet rewilding – particularly with species as wide-ranging and adaptable as wolves – takes place across the multiple-use working landscapes of the region, coming into conflict with alternative conceptualizations and uses of space by communities already present on these landscapes (see Philo & Wilbert 2000; Buller 2008; Drenthen 2018a; b). In this way, wolves present both a material and symbolic challenge – through livestock depredation and competition with human hunters for game, and as threats to heritage and place identity (see (figure 2, below) – with wolf issues often cited as a quintessential example of human-wildlife conflict (HWC).

Scholars of HWC have called for social science attention to these complex issues, mirroring patterns in environmental science and management more broadly (Mascia, et al. 2003; Bruskotter & Shelby 2010; Dickman 2010; Redpath, et al. 2013). While valuable contributions have been made,

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[51] For Soulé and Noss (1998), the "Three C's" – protected area *cores*, with landscape permeability provided by wildlife *corridors*, allowing for an extended range and ecological impact of reintroduced keystone species, particularly megafauna *carnivores* – facilitate scaling up ecosystemic restoration to the landscape or even continental level.

including around wolf issues (e.g. Nie 2003; Clark, et al. 2005; Coleman 2009; Wise 2016), too often attention to "human dimensions" has been limited by the disciplinary training of investigators (often wildlife ecologists and managers) or through a limited definition of said dimensions (via neoclassical economics, psychology, or political science, often using attitudinal surveys and statistical analysis). Only rarely do such engagements draw on social theory, critical environmental scholarship, or deploy qualitative research methods (see Martin, in press B), resulting in an under-consideration of the social context and historical production of HWC (cf. Sayre 2004; Collard 2012; Madden & McQuinn 2014; Margulies & Karanth 2018).

Figure 2: Anti-wolf rhetoric

Examples of rhetoric surrounding gray wolves in the region, including incitements to violence.

(A) Billboard publicizing the anti-wolf campaign of Washington Residents Against Wolves (Landers 2015). [Text reads: "The Wolf… Who's Next on Their Menu? / www.waraw.org / Paid advertisement by Washington Residents Against Wolves LLC"]

(B) Rhetoric to "smoke a pack a day" or "shoot on sight" is common; merchandise for sale at nowolves.com and smokeapackaday.com.

The "wicked problem" of wildlife conflict and coexistence necessitates a broader interdisciplinary effort, with an important role to be played by critical social scientists in unpacking the complex dynamics and key drivers of wildlife conflict (cf. Rittel & Webber 1973; Sayre 2004; Mason, et al. 2018; Martin, in press B). The field of political ecology (PE) has long emphasized the socio-political co-production of environmental conflict, highlighting power relations, historical change, and political economy (Blaikie & Brookfield 1987; Robbins 2004; Perreault, et al. 2015). While we increasingly see important critical work around wildlife issues from political ecologists and more-than-human geographers (Collard 2012; Margulies & Karanth 2018), insights from political ecology and its progenitors provide an under-utilized set of tools for thinking through rewilding and human-wildlife conflict, especially in the developed world. Bringing PE insights to bear on rewilding and HWC moves us toward a reconceptualization of the problem – not simply tacking on human dimensions, but seeing the social as constitutive and inseparable from the ecological – while providing valuable tools for critical engagement.

Long-standing conflicts surrounding land and resource governance in the American West resulted in a groundswell of "First World" PE research in the 1990s and early 2000s. This work looks at the region relationally, emphasizing the value of PE insights for rethinking western issues as well as what PE scholarship can learn from its application in these contexts (McCarthy 2002; Walker 2003; Schroeder, et al. 2006; Robbins, et al. 2009). The dynamics that inspired this "journey home" (Fortmann 1996, 545) persist today – if anything, with heightened stakes and complexity – and there is value in building on these earlier efforts while "cross-pollinating" with more recent insights from across critical socio-environmental scholarship (Martin, et al. 2019; Wesner, et al. 2019; cf. Blaikie & Brookfield 1987, 24). Yet there is also a need to revisit PE's originary insights in approaching contemporary challenges. For the wolf question, *people and parks* and *moral economy* scholarship, in particular, can help to deconstruct and contextualize these environmental risks and social conflicts (cf. Watts 1983; Blaikie & Brookfield 1987).

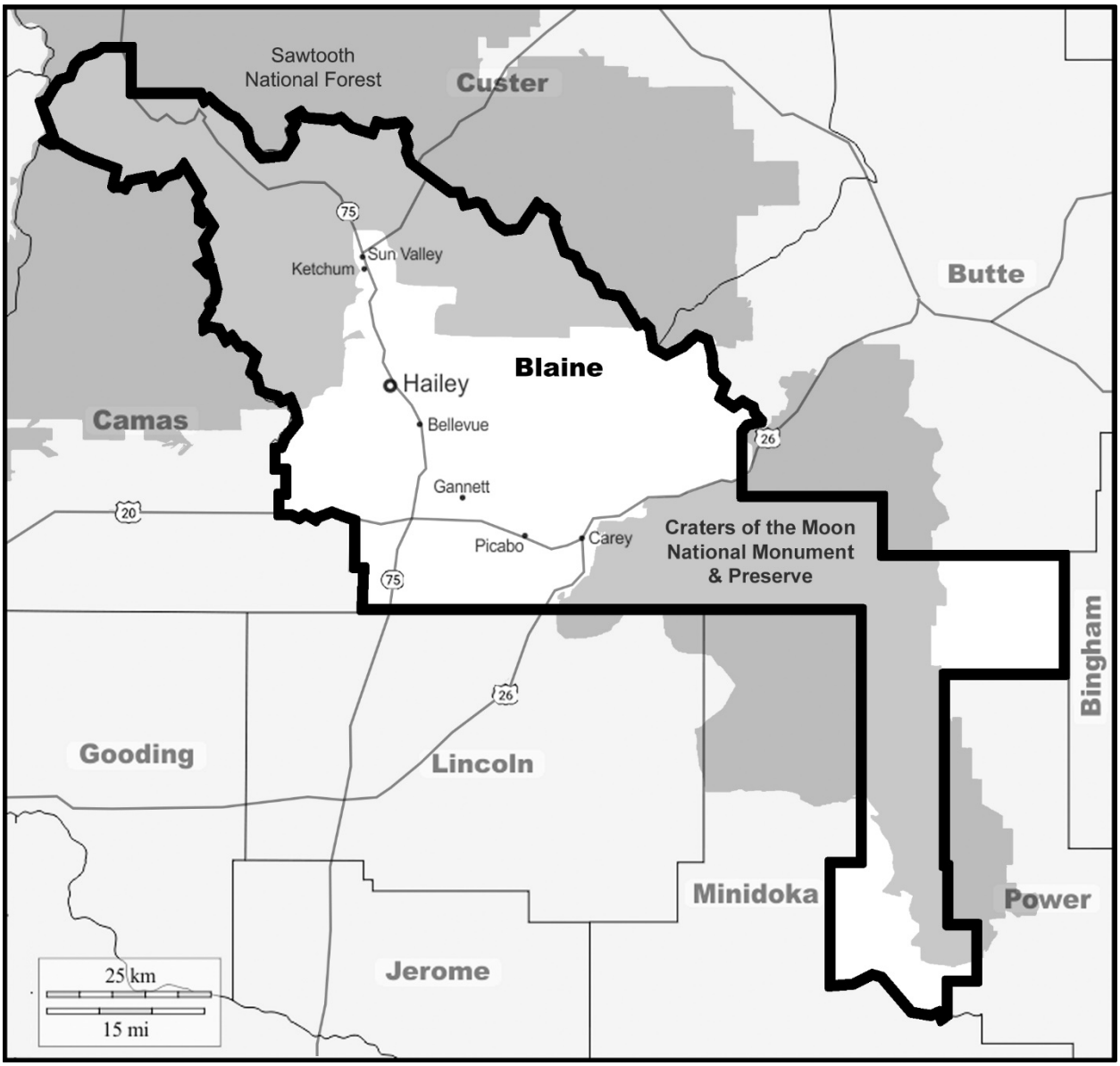
Scholars within PE have only recently begun to engage animal questions in an explicit and sustained way (e.g. Collard 2012; Margulies & Karanth 2018), but the tradition has long explored wildlife conservation through a concern with land use politics. One prominent strand within the field focuses on *protected areas*, drawing on agrarian studies and critical environmental history to highlight the historical production of "wilderness" as an exclusionary and deeply colonial set of practices, which presumes and produces an essential separation between humans and their environment (Guha 1989; Cronon 1995; cf. Williams 1980; Smith 1984; Harvey 1996). Combined with insights from Marxian analyses of accumulation by dispossession (Marx 1867; Harvey 2005), PE has emphasized how coercive practices of "environmental enclosure" and "fortress conservation" reconfigure relations of land access and use and naturalize particular socio-cultural understandings of landscape – resulting in value capture for elite interests and displacement and dispossession of local peoples (West, et al. 2006; Adams & Hutton 2007; Kelly 2011).

This work converges with and draws on earlier scholarship around *moral economy*, concerned with bottom-up reactions to these reconfigurations, once again rooted in agrarian and peasant studies, Marxian political economy, and historical sociology. Thompson's (1975) study of the English crowd, the law, and social resistance to the subversion of customary rights to the commons treads similar ground to Marx's early writings (1842), and parallels Polanyi's insights on social embeddedness and counter-movements to enclosure (1944). Scott borrows and reworks Thompson's ideas in his

analysis of peasant rebellion in Southeast Asia, emphasizing questions of subsistence and social obligation, risk aversion and reciprocity, later linked to "everyday resistance" and the "weapons of the weak" (1976; 1985). Within political ecology proper, Neumann defines moral economy as the "struggles over norms, values, and expectations related to the livelihoods of subordinate classes during major economic transformations" (1998, 37), paralleling Peluso's interest in customary rights, regulatory reconfigurations, and social tensions around the access and use of land and resources (1992; cf. Ribot & Peluso 2003).

Figure 3: Blaine County

Blaine County was created by the Idaho territorial legislature on March 5, 1895. It lies midway between Boise and Idaho falls, extending from the Sawtooth National Forest in the north to the Snake River in the south, and including a portion of Craters of the Moon National Monument and Preserve. The Wood River Valley corridor runs along state highway 75, and includes the towns of Bellevue, Hailey (the county seat), Ketchum, and Sun Valley; the more agricultural south runs along highway 20. Blaine County has been home to mining and livestock grazing booms, and later tourism, recreation, and exurban development surrounding the Sun Valley ski resort and Sawtooth National Recreation Area. Today it is a political outlier in the predominantly Republican state, often described as "an island of blue in a sea of red."



(Map by the author, modified from d-maps.com)

In the North American context, we see the reconfiguration of customary land uses into "crimes against nature" (Jacoby 2003), along with local contestation of expert claims and formal law through social protest (Hays 1959; Fortmann 1990; McCarthy 2002; Robbins 2006). Jacoby, working within a Thompson-informed tradition of environmental "history from below," coins *moral ecology* to describe "a set of vernacular 'beliefs, practices and traditions that governed how rural folk interacted' with their local environments" (Griffin, et al. 2019, 10; citing Jacoby 2003), as well as acts of "being in place" that "serve to resist the discourses and schemes of elite conservation" (Griffin, et al 2019,

4).[52] This scholarship points to the ways in which conservation efforts, in their reliance on top-down and coercive practices of exclusion, can backfire: provoking sabotage and violence against species and environments of concern (cf. Peluso 1993, 200; Clark, et al. 2005), with such acts recast as "social crimes" with community sanction (cf. Hobsbawm 1969; Hay, et al. 1975).

While volumes have been written on wolf reintroduction to Yellowstone National Park, Idaho remains relatively understudied even as its multiple-use landscapes present a closer analogue to those regions where predators increasingly come into conflict with humans around the world. In recent history Idaho has become a conservative bastion as well as home for intense anti-wolf sentiment and activism (AP 2002; Ring 2008). Since the 2011 delisting of wolves from federal endangered species protections, Idaho has also been a space of experimentation – and contestation – around state-managed public harvest and lethal control (Perry 2012; Horne, et al. 2019; Martin, in press A). As one of the states with one of the greatest relative proportion of federal lands, it is also an important stage for long-standing struggles over livestock grazing on public lands (Rowly 1985; Wuerthner & Matteson 2002; Aiken, et al. 2006), with relevance for global debates over conservation in working landscapes (Green, et al. 2005; Phalan, et al. 2011; Kremen & Merenlender 2018).

Between 2015 and 2017, I conducted an intensive case study of wolf-livestock conflict and coexistence efforts in Blaine County, Idaho (figure 3, above), using qualitative mixed methods grounded in critical ethnography and archival research (cf. Sayre 2004; Hart 2004; 2006). Work included site visits and participant observation around livestock production activities as well as the practices of several environmental non-governmental organizations (ENGOs) and collaboratives. I conducted over 40 semi-structured interviews with ranchers, government agents (from county commissioners and local mayors up to federal agencies), and representatives from environmental organizations, complemented by informal conversations among stakeholders and in the wider community. These were supplemented by investigations at local archives – Idaho State Archives in Boise, and the Regional History Department of the Community Library in Ketchum – as well as reviews of agency and organization publications.

This research informs the following analysis of the wolf question, drawing on insights from political ecology and moral economy – and stressing the centrality of historical and geographical context and the co-production of material and meaningful aspects of environmental politics – to help better account for the overdetermination of anti-wolf sentiment in the interest of conviviality (cf. Büscher & Fletcher 2019; 2020). I argue that wolf conflict in the contemporary American West – and, potentially, similar conflicts elsewhere (cf. Bisi, et al. 2007; 2010; Buller 2008; Schultheis 2019) – is best understood in relation to local political economic transformations, bound up with anxieties and struggles over belonging and regional futures. Returning wolves enter spaces already being remade, against a background of range wars and rural gentrification, with their impacts understood from a necessarily situated perspective of diverse pressures on resource users and residents (cf. Watts 1983; Haraway 1988; Haswell, et al. 2017). At the same time, wolves' meaning is (re-)*produced* through enrollment in ongoing legal-political struggles over public lands, driving their discursive construction as a monstrous threat and target for social reaction.

3. Landscapes of fear

[52] Griffin, et al. highlight the "circularity" of influence between moral and political ecology; while they aim to draw a distinction on the basis of the former's more "singular focus" (2019, 17, 19), I would emphasize the value of extending this cross-disciplinary conversation, or ongoing "cross-fertilization" (Blaikie & Brookfield 1987, 24).

A trophic cascade is an ecological concept describing the knock-on effects that removal or return of keystone species – including predators – has on the broader ecosystem. Ecologists use the evocatively termed "landscape of fear" to specify one type of cascade effect, in which megafauna predators like wolves not only affect prey species directly (through predation), but also influence animals' behavior and distribution on the landscape (with consequences for the species these interact with in turn) (Brown, et al. 1999; Laundré, et al. 2010; Miller & Schmitz 2019). This provides one key mechanism, according to rewilding's proponents, by which wildlife reintroductions result in landscape-level effects and ecosystemic restoration (Leopold 1949; Ripple & Beschta 2004; 2005; 2012; Fortin, et al. 2005; Eisenberg 2011).

Wolves' ecological effects, however, are layered atop a human-modified landscape, particularly outside of protected areas like Yellowstone.[53] Trophic effects can thus be altered or even nullified by the proportionately greater impacts of other species (e.g. humans) (Ciuti, et al. 2012; Haswell, et al. 2017). This complicates the vision of wolves as "ecological saviors" (Middleton 2014), but also highlights the need to consider wildlife within a broader *socio*-ecological context. Risk perception and response – humans' own "landscape of fear" – is likewise situated amid and mediated through longer histories and broader structural pressures (cf. Bruskotter & Wilson 2013; Young, et al. 2015; Johansson, et al. 2016).

In 2018, Boise, Idaho was at the top of *Forbes*' list of the fastest growing cities in the U.S., with 7,200 Californians alone moving to the area over a period of approximately 5 years (Sharf 2018; Lim 2020). In 2017, this growth manifested in the roll-out of a new area code in the state, a quotidian impact much commented on by residents (prior to this there was only one area code for all of Idaho). The West grew faster than any other region in the U.S. for each decade of the 20th century (Beyers & Nelson 2000; Hobbs & Stoops 2002), a trend largely continuing in the first decades of the 21st.[54] Economic and demographic shifts have produced a "New West" of reduced dependency on agriculture and traditional extractive industries (ranching, timber, mining), alongside growth in amenity migration, recreation and tourism, and service and high technology sectors (Riebsame & Robb 1997; Winkler, et al. 2007; Robbins, et al. 2009). This West is increasingly urban (the region shifted from majority rural in the 1910s, but has seen significant growth since the 1970s), with burgeoning city centers, sprawl, and exurban development alongside the decline of small towns (Hansen, et al. 2002; Walker & Fortmann 2003; Hines 2010).[55]

Blaine County and the Wood River Valley act as microcosm and crucible of these New West phenomena, with rapid change putting pressures on "traditional" livelihoods and historically-sedimented understandings of place and identity. The Wood River Valley has long been considered prime "sheep country," with a booming livestock-based economy (following the end of the lead and silver mining boom) from the late 1880s through the 1930s taking advantage of a well-suited environment through transhumance grazing. It has been claimed that sheep outnumbered both people and cattle through the 1920s, and with the extension of the Union Pacific railroad Ketchum for a time shared with Hill City, South Dakota the distinction of shipping more sheep than any other depot in the country (Holland 1998, 10, 131; Stahl 1999). Over the century sheep production

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[53] Of course, per PE's insights, wilderness and protected areas are also socially-produced.

[54] Despite development slow-downs around recessions in 2008 and 2012, Idaho had a population growth of 2.2 percent from 2016-2017 (Lybecker, forthcoming).

[55] Following Robbins, et al. (2009), it is worth noting that these patterns are perhaps best understood as regional manifestations of parallel processes taking place in rural communities around the world.

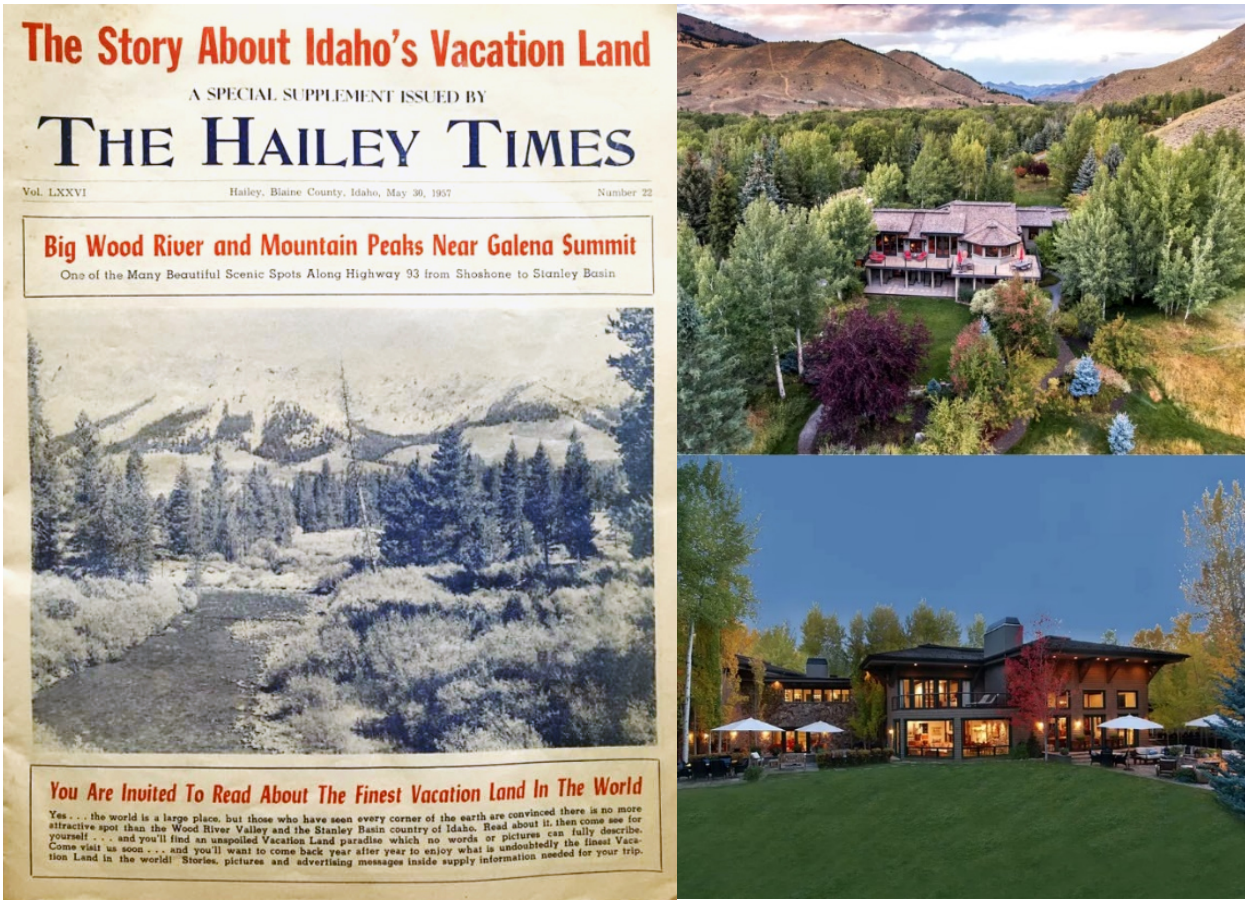
experienced a punctuated decline, particularly after World War II, with waning economic and political power for the once-dominant "sheep kings" (though the Wood River Valley remains home to some of the largest remaining sheep allotments in the state). At the same time, a burgeoning recreation economy, first around local hot springs and later skiing, helped position Sun Valley Resort as a lower-priced alternative to Aspen, while developers appealed to "white flight" and amenity migration from coastal cities to fuel a development boom in the late 1980s (figure 4).

Figure 4: Home on the range

Vacation home development and exurban growth has increased in the Wood River Valley since the mid 20th century, only partially held in check by some of the strictest zoning regulations in the state. This sort of growth pattern is seen in mountain towns throughout the region: the West is increasingly a place "where homes are a fortune and good jobs are few" (Vanderbilt 2017).

(A) (Left) The cover of the *Hailey Times* from May 30, 1957 declares the Wood River Valley "the Finest Vacation Land in the World."

(B) (Right) Some of the multimillion-dollar homes in the Wood River Valley (images from zillow.com).



Blaine County presents as "two worlds," an urban and wealthy north and an agricultural south (Stahl 2000), and one notes the contrasts of "Old" and "New" West moving through space. The county seat of Hailey sports a banner for the upcoming county fair, an agriculture- and handicraft-

focused event with a 4-H show and rodeo (held 25 miles southeast in Carey); continuing north into Ketchum one sees banners instead for upcoming TEDx talks. Each July, Sun Valley hosts the annual Allen & Company Conference, a gathering of the movers and shakers of the world economy described as "summer camp for billionaires" (Sherman & Haselton 2019). Ketchum is home to high-end restaurants displaying the influence (and prices) of California cuisine, even as Carey is declared a food desert (Thorne 2016). Residents in the valley lament the loss of "real" jobs (non-service sector, non-seasonal, and well-paid), and as one former local, now an emigrant in Los Angeles, put it, the place has "lost its soul."

In smaller mountain towns throughout the West – including Salmon, a three-hour drive north of Ketchum (figure 5, below) – the tensions of rural gentrification are palpable (cf. Walker & Fortmann 2003; Hines 2010). With declining extractive sectors, tourism and exurban development are made to make up much of the economic slack.[56] Yet development and tourism threatens the character of place and displacement of prior residents. One resident said of Sun Valley, "You either have 3 jobs or 3 houses – nothing in between" – an extreme version of a cliché repeated throughout the region (cf. Vanderbilt 2017). Rising prices combined with a topography and land regime that prevents building out (towns are often encircled by mountains and/or public lands) results in perennial challenges of affordable housing and traffic congestion.

In close juxtaposition, then, one finds both appeals to tourism and hostile reactions against it. Vanderbilt (2017) describes these as "growing pains," reflections of "the invariable ambivalence about sharing one's slice of heaven with the tourists who help sustain it." Residents – including one former Boise resident and former fishing guide now living in Salmon – describe feeling *under siege*, and make reference to "Californians" (a catch-all for newcomers immigrating to take advantage of lower costs of living) driving up the price of real estate (see figure 4, above). In conversation, there is an easy transition between discussing the "invasion" of "Californians," on the one hand, and the threat of "Canadian wolves" on the other. The explicitly asserted *foreignness* of reintroduced wolves is generally followed by descriptions of purportedly enormous monsters who "kill for fun" – bigger, meaner, and hungrier than the wolves the region "used to have." This framing, and the slippage between the two, highlights the *outsider* status of each actor, drawing a parallel conceptualization of figures both out of place and threatening to an imagined prior state of affairs (cf. Emel 1995; Philo & Wilbert 2000).[57]

[56] Following Neumann (1998), a transition from *landscapes of production* to *landscapes of consumption*.

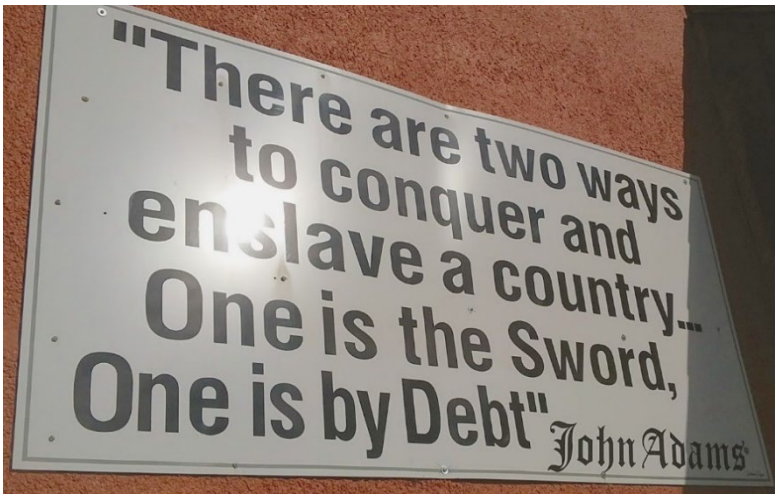
[57] Notably, some of the most vocal anti-wolf rhetoric I encountered came not from ranchers but from residents who otherwise identified with "Old West" culture and expressed anxieties around broader regional changes.

Figure 5: Besieged

A few illustrations of popular sentiment surrounding Idaho growth and shifting demographics.

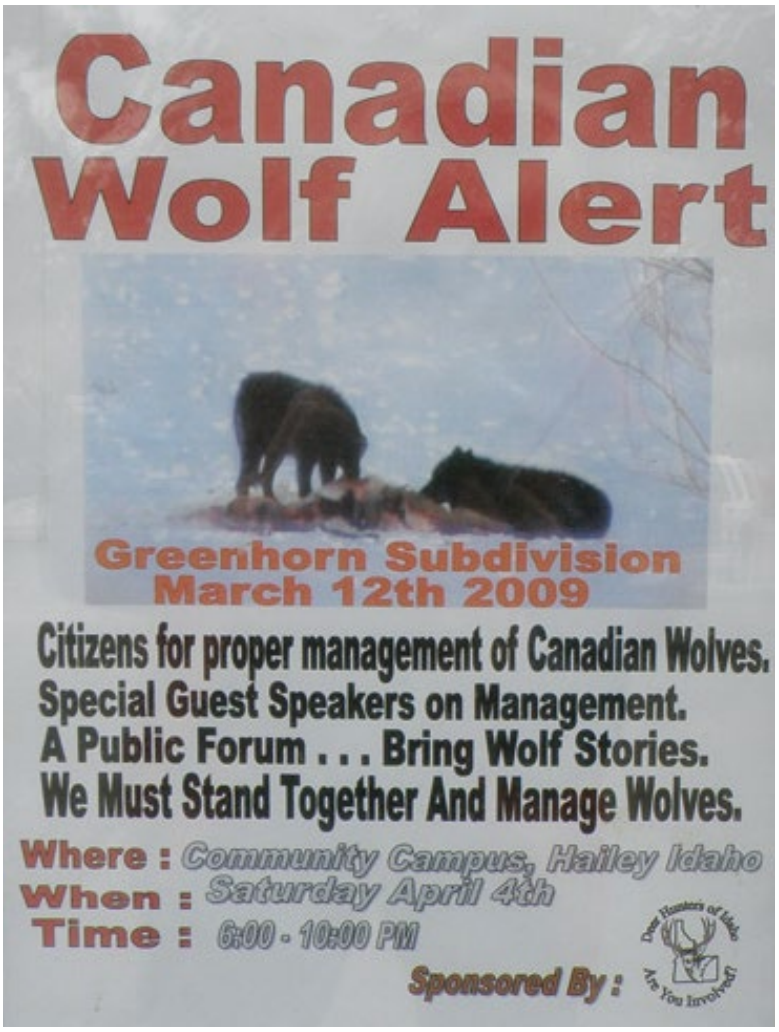
(A) Hand-drawn sign posted on Idaho state welcome sign, found on Instagram and Twitter (@HumansOfLate 2018). Text reads "Welcome to IDAHO" with hand-drawn sign attached "IDAHO IS FULL."

(B) Bumper stickers like these can be seen around Idaho (available from etsy.com and zazzle.com). Text reads "CALIFORNIANS… THE NEWEST INVASIVE SPECIES" (left), and "Keep Idaho beautiful… / …go back to California."



(C) Sign posted in Salmon, Idaho (photo by the author). Signs like these dot the area, reflecting a range of Jeffersonian-libertarian sentiments and concern with regional economic pressures.

[Text reads: " 'There are two ways to conquer and enslave a country… One is the Sword, One is by Debt' / John Adams"]



(D) Poster displayed in the front window of Hailey Les Schwab store (Maughan 2009).

[Text reads: "Canadian Wolf Alert / Greenhorn Subdivision March 12 2009 / Citizens for proper management of Canadian Wolves, Special Guest Speakers on Management. A Public Forum … Bring Wolf Stories. We Must Stand Together And Manage Wolves. / Where: Community Campus, Hailey Idaho / When: Saturday April 4th / Time: 6:00 – 10:00 PM / Sponsored By: Deer Hunters of Idaho / Are You Involved?"]

Idaho holds the largest percentage of land in the state under national forest management as well as the largest contiguous federally-managed wilderness area outside of Alaska, the Frank Church-River of No Return Wilderness (Our Public Lands n.d.; USFS 2012; n.d.). Much of this landscape,

however, is managed as "multiple use,"[58] reflecting federal commitments since the 1970s to managing public lands for increasingly diverse publics and priorities – conservation, recreation, as well as ongoing resource extraction (Aiken, et al. 2006; Martin, in press A). This philosophy is seen locally in the 1972 establishment of the Sawtooth National Recreation Area just north of the Wood River Valley, which expressed a commitment to "...natural, scenic, historic, pastoral, and fish and wildlife values and… recreation values."[59]

Wolf reintroduction to Central Idaho in 1995 and 1996 took place simultaneously with reintroductions in Yellowstone National Park, each part of a federal restoration effort decades in the making.[60] Both the lead-up to and aftermath of this return, however, were fraught with controversy, despite extensive public outreach and comment (U.S. Fish & Wildlife received more than 160,000 public comments on the 1994 Environmental Impact Statement, the largest number on any federal proposal to date) (Fischer 1995; YNP, n.d.). Many western politicians and interests, including the livestock industry, framed reintroduction as a top-down imposition, while many conservationists and pro-wolf organizations opposed federal reintroduction at the time for fear of reaction. In protest of reintroduction's legitimacy, the Idaho state legislature went so far as to prohibit involvement of the state's Fish and Game Department (IDFG) in the recovery and management of wolves between 1994 and 2003.[61]

Wolves are but one of many threats to livestock, and a relatively minor one compared with weather, disease, and even other predators like coyotes. Sheep, in particular, display "extraordinary facility with which they take leave of life, and [a] great variety of ways in which they make their exit"(Gilfillan 1957, cited in McGregor 1989; see also Wentworth 1948). Environmentalists often frame anti-wolf reaction as *irrational* given the relatively minor impacts of wolf depredation compared with overall industry or regional losses (e.g. WildEarth Guardians. n.d.). Yet this fails to account for the unevenness of these effects and the situated perspective of ranchers. Stochastic depredation incidents are not experienced at the sector level, but rather by individual operators, for whom a single wolf attack, especially on sheep or calves, can be catastrophic (see figure 6, below). Cattle ranchers further point to less-than-fatal and indirect impacts on their livestock, including behavioral changes, reduced weight gain and reproductive success, as well as post-traumatic stress symptoms in their animals (Howery & DeLiberto 2004; Steel, et al. 2013; Ramler, et al. 2014; Steubner, n.d.).[62]

While their scale is debatable and surrounding discourse hyperbolic (see Ring 2008; Mulrony 2018), wolves' impacts on livestock producers are real. Wolves' return to shared landscapes necessitates reassessment and reconfiguration of ranchers' grazing management, lambing and calving practices, and deployment of nonlethal deterrents (cf. Buller 2008; Wilkinson, et al. 2020; Martin, in

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[58] Multiple-Use Sustained-Yield Act of 1960 (P.L. 86-517).

[59] Sawtooth National Recreation Area Act (86 Statute 612, Public Law 92-400, August 22, 1972).

[60] On a cold morning in January 1995, four wolves were released into "the Frank," the largest forested wilderness area in the continental U.S. A total of 35 individuals would be released into Idaho over the next two years, going on to form packs and raise pups, with population growth meeting minimum recovery goals as early as 1999 (Fischer 1995; Bangs & Fritts 1996; ILWOC 2002; Stone 2014).

[61] Idaho Code §36-715. It was only in anticipation of delisting – removal of wolves from Endangered Species Act protections and the devolution of management to the state – that IDFG was allowed to coordinate with the U.S. Fish and Wildlife Service to implement the 2002 state management plan (see Martin, in press A).

[62] Notably, some of these are the very sorts of behaviors highlighted by ecologists when exploring wolves' trophic cascade effects on wild ungulates (Ripple & Beschta 2004).

press B) – to say nothing of the more amorphous, non-material costs of living with wildlife (see Thondhlana, et al. 2020). Yet wolf impacts also cannot be isolated from the socio-economic environment in which ranchers act: one of marginal returns, fluctuating prices, and diverse land use pressures.

Figure 6: Wolf predation

(A) An instance of sheep "pile up" caused by stampeding behavior, reportedly following wolf presence in the area, taken in southeastern Idaho (photo courtesy of USDA APHIS Wildlife Services; Levy 2013).

B) An instance of "surplus killing," in which wolves kill more than they immediately consume (Muhly & Musiani 2009; Howard 2016; Miranda 2016). While these events are rare and ecologically explicable (Kruuk 1972; Zimmermann, et al. 2015), they are experienced and interpreted by ranchers and hunters in more affective ways, adding to an understanding of wolves as greedy killers (cf. Carter, et al. 2012; Middleton 2014).

At a workshop held by Wildlife Services in Northern California in 2016[63] – when wolves were only just beginning to establish themselves in the state – one rancher felt he was being asked to deal with depredation *on top of* numerous other concerns, and expressed fears that wolves would be the final blow in pushing him out of business. Rangeland operators face fluctuating commodity prices (both in inputs like winter feed and their own final product),[64] competition from large-scale feedlot operations and international producers (notably Australian and New Zealand lamb imports (Stahl 1999)), and uncertainty over labor availability and costs (sheep ranchers in Idaho largely rely on Peruvian herders through the H-2A temporary agricultural worker visa program).

Operators contend with pressures on private ("deeded") lands stemming from rising property values and tax burdens related to regional growth, with resultant pressures to sell-off or subdivide these lands for development – increasingly the "highest and best use" in the region (cf. Smith 1987; Sheridan 2001; Addie 2019). Development pressures have knock-on effects on public land use, as well: as surrounding lands are sold off, grazers can lose access to transhumance routes built up over years with neighbors (cf. Granovetter 1985; Haggerty & Travis 2006), while on public range ranchers face competition and reaction from recreationists who see domestic animals as unsightly and out of place (see figure 7, below, for community and producer efforts to overcome this animosity). One rancher with lands north of Boise, who described himself as one of the few operators in the area who still trailed his sheep to their summer grazing allotments (walking, rather than transporting them by truck),[65] noted that one former route was now a golf course, while another crossed lands now being sold off for over a million dollars, a cost "outside [their] price range."

Contemporary pressures continue a historical arc of regional transformation and sectoral decline. Oral testimony from sheep ranchers going back to the 1970s relates very similar concerns around predators (then coyotes), rising labor costs, and anxieties over land tenure in light of regulation "squeeze" (Peck 1991). Speaking in 1983, Miriam Breckenridge, wife of a prominent regional sheep operator and collector of many of the oral history testimony of ranchers in the area, noted:

> *"...what really began putting the sheep business out of business was when the rest of the United States became interested in this public domain. You had more people living in this area, and a whole process of restrictive use of that public domain for grazing began… and although the cuts were spread over a period of years, you have got a seventy-five percent cut in the amount of land you could use to fatten your animals… even though this was spread over a period of, say, five years, you couldn't handle that… Because you didn't have any other land to go to, you couldn't afford to buy the land, the size of your operation had to be reduced on those reduced figures."*

Many voiced additional trauma associated with the 1980s farm crisis, when agriculturalists faced falling commodity prices, soaring debt, and farm foreclosures nationwide (Peavey 2001; cf. Goodman & Redclift 1989; Belyea & Lobae 1990). Diane Peavey, another rancher's wife and co-founder of the Trailing of the Sheep festival (figure 7), describes the 1980s "dance of survival" between farmer and banker (2001, 31), paralleling testimony from sheep ranchers of the 1930s. In each period, the result was fewer operators on the land, and those who remained often did so by

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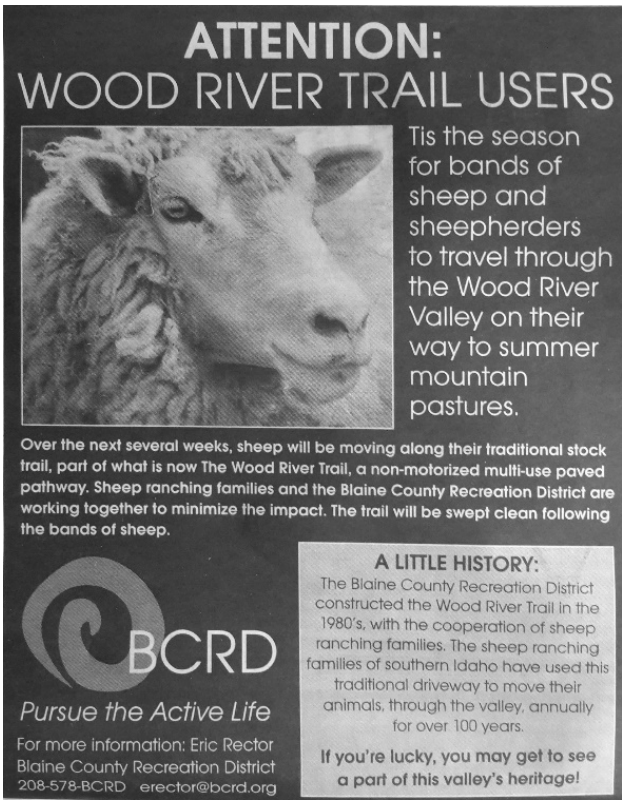
[63] "Tools for Ranching with Wolves and Other Large Predators." USDA APHIS Wildlife Services, McArthur, California, 3 February, 2016.

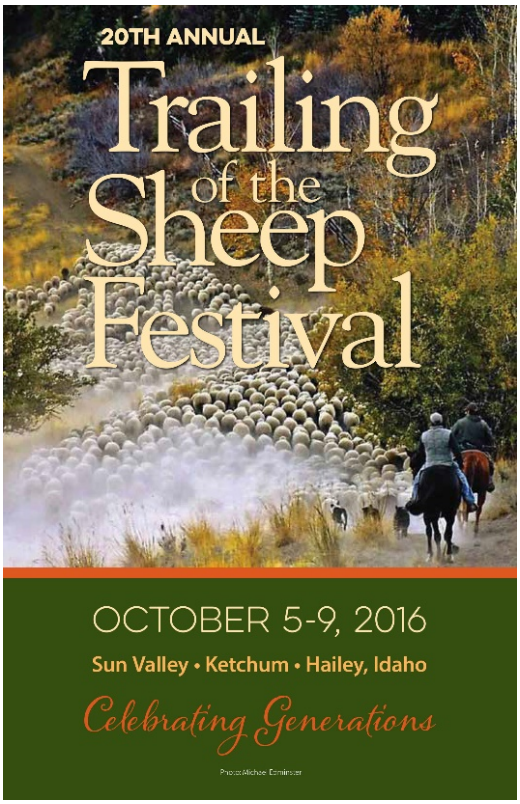
[64] Sheep ranchers in Idaho often cited rising winter feed costs as a reason for moving away from the more predator-defensible shed lambing, demonstrating the challenge of cost-benefit and risk management calculations.

[65] Trucking became the regional norm over the latter half of the 20th century with the decline of the railroad and the availability of cheap fossil fuels, paralleling broader patterns of mechanization in agriculture.

scaling up – buying their former neighbors' deeded lands and associated allotments – or diversifying operations into cattle and alternative income streams,[66] including establishment of conservation easements to ease growing tax burdens (cf. Sheridan 2001; Merenlender, et al. 2004).

Figure 7: Sharing space with sheep





(A) (Left) Notice from the *Idaho Mountain Express* (May 5, 2016) notifying trail users of sheep presence.

> [Text reads: "ATTENTION: WOOD RIVER TRAIL USERS / Tis the season for bands of sheep and sheepherders to travel through the Wood River Valley on their way to summer mountain pastures. / Over the next several weeks, sheep will be moving along their traditional stock trail, part of what is now The Wood River Trail, a non-motorized multi-use paved pathway. Sheep ranching families and the Blaine County Recreation District are working together to minimize the impact. The trail will be swept clean following the bands of sheep. / A LITTLE HISTORY: The Blaine County Recreation District constructed the Wood River Trail in the 1980's, with the cooperation of sheep ranching families. The sheep ranching families of southern Idaho have used this traditional driveway to move their animals, though the valley, annually for over 100 years."]

(B) (Right) Since 1996, the Trailing of the Sheep festival has had some success in building community support for coexistence between Old and New West, while marketing cultural landscapes and rural livelihoods as tourist attractions (see also Peavey 2001).

[66] While the relative importance of livestock to Idaho's economy shrunk over the 20th century, beef remains a significant portion of the state's agricultural sector as the number two farm commodity in cash receipt after dairy (USDA NASS 2019; Ellis 2020).

There is a certain resignation in the way livestock producers speak of wolves. One rancher described the struggle in Sisyphean terms: even if lethally controlled, a new pack would be back the next year because his lands were good wolf habitat. Rather than adapt to this new reality – the fact that "wolves are here to stay," as another producer put it – otherwise conservation-minded ranchers continue to speak of wolves as "a problem we didn't ask for," and resist adoption of nonlethal deterrents despite demonstrated successes (Miller, et al. 2016; Stone, et al. 2017; Much, et al. 2018; Martin, in press B). The availability of subsidized compensation and preventative measures appears insufficient to win over hearts and minds, a clear challenge for biosecurity-based framings of wolf conflict (cf. Buller 2008; Wilkinson, et al. 2020). Yet the regional context alone also cannot account for wolf-related vitriol, nor for the difference in attitudes toward wolves compared with other predators. Wolves are clearly more than just an agricultural pest, and both risk perception and what are understood as "acceptable losses" are bound up with broader political contestation over land and regional futures.

4. Range wars and land grabs

The context wolves enter is one of diverse economic pressures on residents and livestock producers bound up with New West regional transformations. Yet this dynamic is not merely a passive backdrop, but one produced in part through ongoing and deep-rooted regional struggles over land access and use. A history of "range wars" and competing visions of the future heightens the challenge of sharing space with wolves, while deployment of these animals in legal-political struggles produces a set of associations that perpetuates polarization around and violence toward the animals themselves.

Tensions surrounding livestock grazing on public forests and rangelands go back to the dawn of the last century (Rakestraw 1958; Rowley 1985). John Muir infamously referred to sheep as "hooved locusts" (NAS 1897), and much of environmental discourse and legislation over the latter half of the 20th century reflects a philosophical commitment to *wilderness* as idyllic "untrammeled" places incompatible with human residence and productive economic activities. Despite critiques from environmental historians and political ecologists documenting the production of these spaces through prior human occupation and subsequent effacing of these patterns through constitutive exclusions (Cronon 1995; Neumann 1998; DeLuca & Demo 2001; Jacoby 2003), there remains a significant strand of American environmentalism committed to practices of fortress conservation and wilderness ideology.

Shifts in public attitudes, agency practices, and western economies produced populist reactions around property rights and federal regulation in the last quarter of the 20th century.[67] From the Sagebrush Rebellion of the 1970s and 1980s, the Wise Use movement of the late 1980s and 1990s, and continuing in militia actions like the Malheur takeover of 2016 (McCarthy 2002; Walker 2018; Simon, et al. forthcoming), right-wing political forces have mobilized regional anxieties and built a powerful populist narrative that continues to attract a variety of supporters (Manfredo, et al. 2017; Tracey 2017; Berlet & Sunshine 2019; McCarthy 2019; Wuthnow 2019; Skillen 2020). Regional polarization was further heightened by environmental organizations and campaigns pursuing the removal of extractive industries from western public lands, exemplified in the controversy and legal

[67] It is beyond the scope of this paper to fully consider the causal directionality of these interrelated processes.

battles over the northern spotted owl (Watson & Muraoka 1992; Prudham 2005), and in Earth First!'s campaign of "Cattle Free in '93" (Anderson 1989; Dickson 2019).[68]

One organization that emerged from this gestalt was Western Watersheds Project (WWP), founded in 1993 as the Idaho Watersheds Project and with headquarters still located in Hailey, Idaho. WWP's stated mission is to "protect and restore western watersheds and wildlife through education, public policy initiatives, and legal advocacy."[69] One of their central foci is public lands ranching, specifically the removal of livestock from public lands, largely pursued through litigation. Despite a global shift since the 1990s toward collaborative environmental governance and community-based natural resource management (Brosius, et al. 1998; Charnley, et al. 2014; Redpath, et al. 2017), including regional efforts around private lands conservation and collaborative "radical center" approaches (Charnley, et al. 2014; LeMenager & Wisiger 2019), groups like WWP remain committed to a strong "land sparing" and "neo-protectionist" approach (cf. Wilson 2016; Büscher & Dressler 2007; Büscher & Fletcher 2019; 2020).

Although small compared to other national environmental nonprofits (including WWP's frequent co-plaintiff, the Center for Biological Diversity), the organization "punches above its weight" and remains one of the most regionally well-known and vilified ENGOs among ranchers and agriculturalists in the region, due to its explicitly anti-grazing politics, litigiousness, and antagonistic comportment toward rural land users (e.g. Protect the Harvest, n.d.). WWP leadership emphasize reducing grazing through various means, including buy-out and retirement of permits and getting public land agencies "to comply and enforce the laws that exist."[70] While personalistic antagonism has declined under more recent directorships, WWP remains associated with hostile rhetoric and "incessant" litigation against agencies and ranchers (see figure 8, below).

Wolves have long had an association with wild places, a connection rooted in early European development and shifting relations to landscape. With humans' elimination of wolf prey species through hunting and deforestation, and the expansion of human settlements and agriculture, wolves increasingly turned to livestock depredation. Conflict led to intensified extirpation efforts, driving declining wolf populations into sub-optimal regions far from human settlements (Zimen & Boitani 1979). Wolves thus became conceptually linked to the wasteland, the dark forest, and the *wilderness* as external and threatening to society (Donalson 2006; Pluskowski 2006; Marvin 2012; cf. Agamben 1998) – greedy and cruel inhabitants of a "place without God" (Walker 2009, 9), cast in religion and folklore as an object of loathing, violence, and persecution.

It was only with the revalorization of wilderness itself – beginning at the turn of the last century, and itself bound up with the subjugation and expulsion of indigenous peoples in the Americas (including the Shoshone and Bannock tribes in Idaho) – that these associations began to change. By the mid 20th century, we see a broader shift in popular understandings of and appreciation for wild nature, from something to be conquered or tamed to something romanticized, to be preserved, protected, and restored (Nash 1973; Cronon 1995; Holland 1998, 51). National attitudes toward wolves have moved in parallel, driven in part by PR campaigns from environmentalists – including

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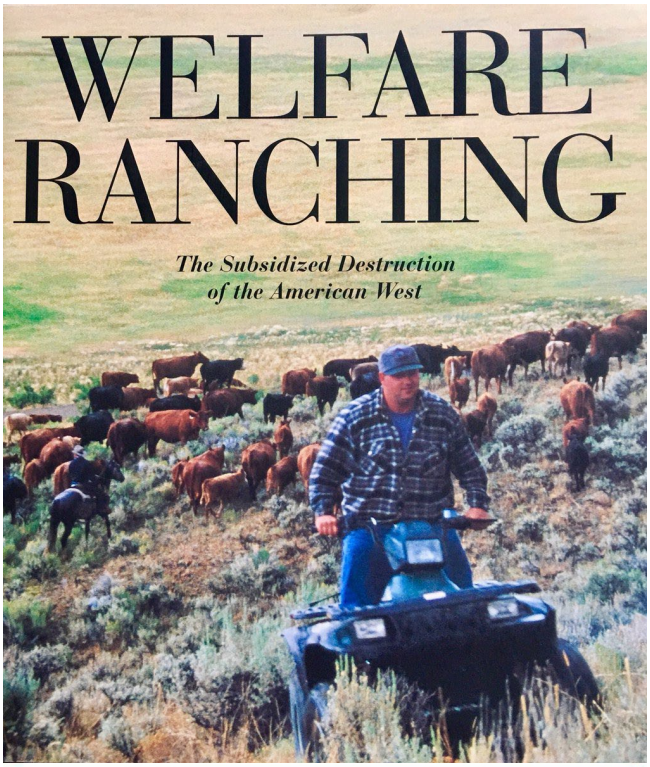
[68] White highlights the "weirdness" of this period in the region (1997); more recent work has emphasized the West's ongoing development as a fruitful space for investigation (Robbins, et al. 2009; Martin, et al. 2019).

[69] https://www.westernwatersheds.org/about/.

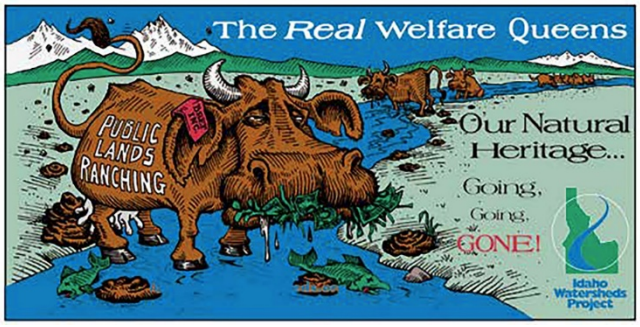
[70] Although, as others have noted, environmental law is frequently vague and open to interpretation in its implementation (MacCleery 2008; Brugger, et al. 2020; Martin, in press A).

the work of the Dutchers around wolf sociality in the Sawtooth Mountains of Idaho prior to reintroduction (Dutcher, et al. 2013; cf. Lopez 1978; Mowat 1993; Williams, et al. 2002).

Figure 8: Western Watersheds Project



(A) The large-format book *Welfare Ranching* (Wuerthner & Matteson 2002), co-authored by WWP's Oregon Director George Wuerthner, displays the sort of visual argumentation often used by the organization. The term "welfare rancher" itself is thought to have been coined by WWP founder Jon Marvel.



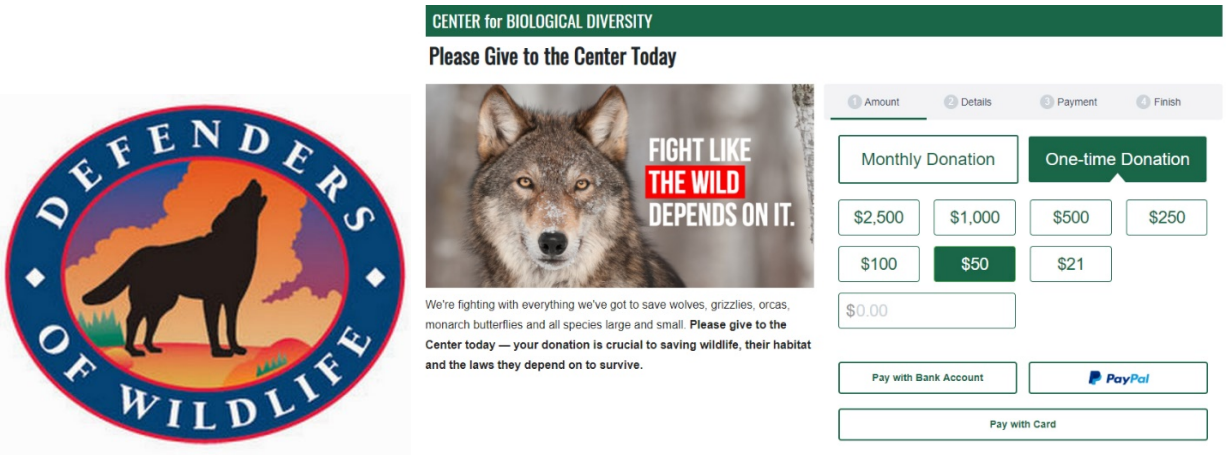
(B) Part of WWP's 1998 billboard campaign, invoking the racist and classist discourse of the "welfare queen" (Ivins 2018; cf. Hancock 2004). [Text reads: "The *Real* Welfare Queens / Our Natural Heritage… Going, Going, GONE!" Cow is labeled "Public Lands Ranching"]

(C) An example of the sort of visual juxtapositions often used as evidence for WWP's anti-grazing stance, implying that exclusion of grazing animals improves landscape quality and ecological health (graphic from westernwatersheds.org).

As wolves moved from pariahs to paragons of abused nature – reminders of society's sins and an opportunity for redemption (Coleman 2009; Roman 2011, 157) – they became one of the first species listed under the Endangered Species Act,[71] initiating efforts toward the restoration of the species in its former range. In the West, this reversal occurred in parallel with – and, arguably, was driven in part by – a shifting regional economy. For those associated with the Old West, however, wolf protection and reintroduction smacked of hypocrisy and "flip-flopping": many recalled federal bounty programs and extermination efforts, with some even claiming relations who helped "get rid of 'em" or "shot the last wolf" in a particular place.

Although the Wilderness Act officially permits historical land uses, including livestock grazing, popular understandings of wilderness – and the definition in the act itself – is one of places "where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."[72] Such understandings create a logical incompatibility: if wolves are creatures of wilderness – an association with deep historical roots, yet perpetuated in the present (see figure 9, below) – their presence on a landscape *makes that place a wilderness* (even if it is a working landscape, and even as wolves are known habitat generalists (Mech & Boitani 2010)). Even as wolf-livestock coexistence is demonstrated as possible and desirable for many (Fascione, et al. 2004; Miller, et al. 2016; Frank, et al. 2019), wilderness ideology sets wolves and livestock grazing as incompatible: the latter must be removed.[73]

Figure 9: Wolves and wilderness



(A) (Left) The logo of Defenders of Wildlife, an ENGO that played an important role in wolf reintroduction to the region, prominently displaying the wolf as emblem.

(B) (Right) Calls for financial support like these play on the associations of wolves and wild nature, as well as the at-times "fanatical support" of wolf proponents (Robbins, et al. 2014; graphic from biologicaldiversity.org).

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[71] Endangered Species Act (87 Statute 884, Public Law 93-205, December 27, 1973).

[72] The Wilderness Act of 1964 (Pub.L. 88–577).

[73] Although some species may require "bunkering" and restriction of human uses (Greenough 2003, 191), others are able to survive and even thrive in "disturbed" environments (cf. Marris 2011) – wolves are much closer to the latter.

Charismatic megafauna species – including wolves – are often enrolled in ENGO campaigns (figure 9), with their popular appeal used to garner attention and funds in support of environmentalists' efforts (Lorimer 2015; Whitley, et al. 2020; cf. Callon 1984; Latour 2005; Li 2007). Wildlife species are also deployed as part of conservationists' legal efforts, with their habitat needs and behavior mobilized toward new or stricter enforcement of environmental regulations. WWP routinely argues for the removal of livestock grazing from public lands using narratives of economic backwardness of rangeland livestock production – citing its "fiscal irresponsibility"[74] and public subsidy (Wuerthner & Matteson 2002; cf. Nie 2002, 69) – alongside an entrenched understanding of ranching and wildlife's incompatibility. Despite the demonstrated successes of organizations like the Wood River Wolf Project (Stone, et al. 2017; Wilkinson, et al. 2020; Martin, in press B), itself headquartered mere blocks from WWP in Hailey, Wuerthner has publicly called such nonlethal coexistence efforts a "delusion" (2017).

Among land agencies and resource users – even among ranchers critical of dominant attitudes and practices within the livestock industry – there is a sense that when species of concern are found in an area, they bring with them the remaking of land access and use. Historically grazed lands may be closed off, or grazing otherwise made impractical through regulation or the attrition of legal challenges. While many species have taken on such a political role – including the spotted owl, desert tortoise, and more recently the sage grouse – wolves' spatio-historic associations, cultural-symbolic resonance, and wide-ranging qualities result in a particularly fraught combination. Combined with their active deployment in land politics, they become experienced by ranchers and residents as a vanguard of dispossession, understood as invasive, transgressive, and in alliance with those who would see them displaced.

Importantly, this dynamic is inextricably material and meaningful, reliant on wolves' own species capacities as well as their enrollment within a broader assemblage of relations, neither of which on its own can account for associated animosity. Wolves are not, objectively, the greatest threat to livestock in the West – for sheep, at least, ranchers repeatedly noted the relatively greater threat of coyote depredation, and in conversation would point to any number of other socio-economic challenges to staying in business. Yet wolves are *made into* the species of greatest concern, a stand-in for myriad anxieties facing residents and producers, their meaning produced through their enrollment in environmental organizations' broader strategies. Given these associations, the fear and anger directed at wolves in the region becomes more comprehensible. To the extent that wolves are made to act as a standard-bearer for wilderness – and a politics that promises the expulsion of historic uses and users of the landscape – they become a target for vitriol and violent reaction (figure 10, below).

Rewilding is often rationalized on the basis of rural decline and depopulation, promoted as a "win-win" to repurpose and revalorize depressed agrarian landscapes through ecotourism and ecosystem service benefits (Donlan 2005; Navarro & Pereira 2012; Pereira & Navarro 2015; van Maanen & Convery 2016). Proponents frame such declines as "inexorable" (e.g. Pereira & Navarro 2015, vii), leaving their drivers uninterrogated and glossing over the continued presence of significant cultural and economic ties to these spaces – a tension highlighted by Drenthen as one between rewilding and "heritage landscapes" (2018a; b). In other words, communities still live here, and the supposed economic benefits of rewilding return do not necessarily accrue to those who bear the added costs of living with wildlife. For residents and resource users, rural declines are perceived as driven or at least accelerated by conservation – a perception heightened by environmentalists'

[74] https://www.westernwatersheds.org/public-lands-ranching.

promotion of regulatory and discursive exclusion. Wuerthner, again, explicitly counterposes rewilding against current land usage, framing conservation as incompatible with agricultural uses (2019a; 2019b).[75]

Figure 10: Shoot, shovel, and shut up

Bumper stickers like these can seen throughout the region, communicating variations on a theme: direct violence toward wolves through illegal poaching, community sanction and silence, with such acts framed as protective of ranching and hunting (images from nowolves.com, smokeapackaday.com, and gunshirts.com).

Public lands have long stood as a sort of hybrid space: not private property, but serving as the basis of private accumulation and regional development. Long-term grazing leases act as a sort of pseudo-right, with origins in the political struggles surrounding the founding of the public lands agencies (indeed, allotments act as transferable assets that move with the sale of private base properties) (Hays 1959; Rowley 1985; Stegner 1992; Sheridan 2001; cf. Fortmann 1990; Ribot & Peluso 2003). This history is almost universally glossed over by ENGOs, who instead frame public lands grazing as a public subsidy and privilege – rather than a historic political compromise – and whose supporters at times express utter confusion over the presence of livestock on public lands (for instance in social and news media comments sections).

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[75] Implicit in rewilding as practiced, then, is a logic of "highest and best use," itself with roots in settler colonialism and parallels in debates over market rationality and gentrification (cf. Cronon 1983; Sheridan 2001; O'Neill 2007).

The extension of regulatory protections and restrictions of use based on the needs of wildlife reconfigure relations of land access. From the perspective of historic users, such changes are experienced as a dispossession, at times even described as a "land grab" (Levin 2016). The land grabs literature is generally concerned with large-scale land acquisitions primarily in the Global South (many driven by food security fears following the 2007-2008 world food price crisis). An associated critical literature around "green grabbing" focuses on the appropriation of land and resources justified by environmental agendas (Borras, et al. 2011; Corson & MacDonald 2012; Peluso & Lund 2013; Rulli, et al. 2013; Holmes 2014; Edelman, et al. 2017). These "grabs" are often linked with a sense of looming crisis and construct local resource users in ways that delegitimize their uses and position them as "against nature" (cf. Jacoby 2003). Importantly, this "grabbing" is not limited to direct enclosure or commodification, but involves novel forms of valuation and complex articulations of discursive and material (Fairhead, et al. 2012; Li 2014; cf. Polanyi 1944; Olwig 2016).

A land grabs framing is also employed by environmentalists highlighting the exclusionary private interests of resource users, particularly to the extent these converge with arguments for the devolution of public lands governance (cf. Coggins 1996; Edwards 2017). In WWP's newsletter, *Western Watersheds Messenger*, a member of the board of directors refers to those seeking to turn public lands over to the states and even private ownership as "land-grab groups" (Klitz 2016). Klitz (2016) cites correspondence from Herber Maier, then-Acting Region Four Director of the National Park Service, who wrote in 1947 of "a campaign of stock-men and wool-growers for legislation to weaken and eventually to eliminate federal control of the millions of acres of public forest and grazing lands in Western states." Maier in turn references DeVoto's "The West Against Itself" (1947), in which the historian and essayist writes of efforts "to liquidate all public ownership of grazing… and forest land in the United States… turning them over to the states, which can be coerced as the federal government cannot be, and eventually to private ownership" – in sum, "*one of the biggest land grabs in American history*" (emphasis added).

As with "welfare ranchers" (figure 8, above), "land grabbing" is used by WWP to denigrate the concerns and interests of livestock producers, clearly painting a victim and aggressor while erasing both the complex history and politics of public lands grazing as well as differences of opinion and practice within the opposing group. Alongside the deployment of wolves and other wildlife species as part of broader environmental campaigns, these framings exacerbate polarization and induce their converse: right-wing actors playing on and stoking anti-environmental and anti-wolf sentiment – or, as one conservation-minded rancher put it, "pimping wolves for political gain."

From the 1960s and particularly since the 1990s, many ENGOs have emphasized a litigious strategy akin to WWP's, predicated on federal regulatory power (MacCleery 2008; Brugger, et al. 2020; cf. Bentata & Faure 2015). Yet the history of government policies vis-à-vis public land management confounds the assumption that the state is a "neutral mediator" or even a promoter of conservation (Peluso 1993, 215; cf. O'Connor 1998), especially in light of recent efforts to roll back environmental regulations (Pang & Greenwald 2015; Thompson 2018; Simon, et al. forthcoming; cf. Dillon, et al. 2019). Rather, ENGOs' antagonistic politics and reliance on top-down, regulatory-coercive strategies can *backfire*, provoking local resistance, sabotage, and even violence toward species and environments of concern, as well as state efforts to weaken environmental laws or turn a blind eye toward their implementation (Peluso 1993; Jacoby 2003; Clark, et al. 2005; Prudham 2005; Martin, in press A).

Literature around wolf conflict often points to "sociopolitical identity" as a key factor for predicting attitudes toward wildlife and management (e.g. Nie 2003; Clark, et al. 2005; Hamilton, et al. 2020). Yet understanding of and association with a given identification is neither static nor

uniform, but rather produced and reinforced through relating. While Idaho ranchers perform "rancherness" through dress, behavior, and rhetoric – from western wear to pickup trucks, dog breeds to religiosity – in my fieldwork I encountered as many individuals who bucked a particular trend as those who conformed to it.[76] Rather than building on this diversity of understandings and practices toward collaborative coexistence, the environmental politics described above instead promote the closing of ranks, resulting in retrenchment and reaction.

Politicians and right-wing populists stoke this polarization, drawing on wolves' symbolic multivalence and contemporary political associations to forge them into effective scapegoats for more amorphous concerns, redirecting anger toward a monstrous external foe.[77] In 2007, former Idaho Governor Butch Otter (R) told a crowd he wanted to "bid for that first ticket to shoot a wolf" himself (Russell 2009), and in 2011 declared wolves a "disaster emergency" in the state (Zuckerman 2011), encouraging anti-wolf sentiment through executive authority. Since delisting in 2011, Idaho has made efforts to limit the geographical extent and overall number of wolves in the state, liberalizing hunting seasons (extending both duration and quotas) and channeling money toward lethal control to the detriment of collaborative coexistence efforts (Martin, in press B). IDFG-supported expense reimbursement programs have even created economic incentives for wolf trapping, or bounties by another name (see figure 11, below).

Such policies run counter to the best available science around wolf management and depredation reduction (Berger 2006; Treves 2009; Miller, et al. 2016; Treves, et al. 2016; Lennox, et al. 2018; van Eeden, et al. 2018), and funnel significant state funds toward removal in a state otherwise committed to austerity (Idaho is constitutionally required to maintain a balanced budget).[78] Idaho ranks next to last in the nation on per-pupil spending K-12 spending – or $7,486 per pupil in 2017 (ahead of only Utah, and compared to a national average of $12,201) (Richert 2019) – yet in 2014 spent $4,600 per wolf on lethal control through the Idaho Wolf Depredation Control Board (Russell 2015). These "fantastic perversions," as one rancher put it, reflect an "insidious politicization," and result in a situation in which operators financially support lethal control regardless of their personal feelings or political affiliations – as the same rancher put it, "I pay to kill wolves...and I can't do a fucking thing about it!" (see figure 11, B).

These developments are not only worse for wildlife, as policy and polarization undermine recovery and coexistence efforts on the ground, but they also provide fuel for a broader right-wing political turn in the region (Manfredo, et al. 2017; McCarthy 2019; Martin, in press B) – diverting attention and funds from structural problems while emboldening reactionary political forces and fringe views. Despite Idahoans' "long history of political unpredictability and willingness to cross party lines," by the turn of the century Idaho had become the most conservative state in the Union,"

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[76] A consideration of rancher semiotics – including how consumption patterns and comportment articulates with commitments to individuality – is unfortunately beyond the scope of this paper (see MacKenzie 2011).

[77] This misrecognition and misdirection parallels similar efforts "to facilitate state apparatus-building and social control" (Peluso 1993, 199; Peluso 1992), and the promotion of elite and industry interests through socio-environmental conflicts (see Prudham 2005 on the northern spotted owl). It might be read as a reversal of the phenomenon described by Peluso – rather than "appropriat[ing] conservation concerns... as a means of eliciting support for their own control" (1993, 199), Idaho appears to be using anti-wolf sentiment in the interest of broader policy aims. Although beyond the scope of this research, we might consider these dynamics vis-à-vis racism and racialization in other contexts, particularly given the predominantly white population of Idaho (Peterson 2017; cf. Said 1978; Pulido, et al. 2019; Berlet & Sunshine 2019).

[78] Idaho Statutes, Section 67-3512A (1981).

with Republicans holding nearly all statewide offices including close to 90 percent of the state legislature in 2001 (Aiken, et al. 2006, 65, 92).[79]

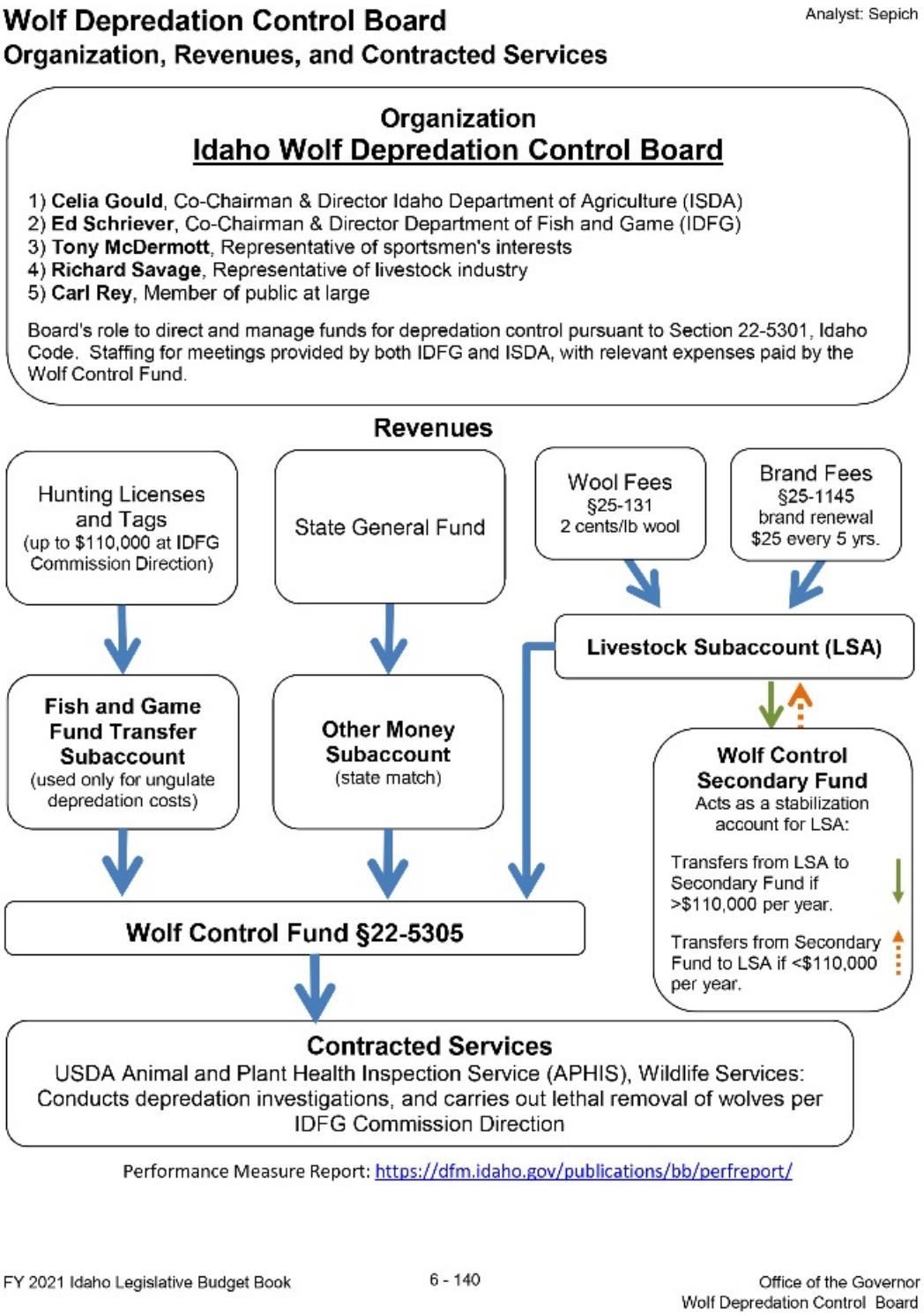
Figure 11: Idaho wolf control

(A) The Foundation for Wildlife Management, a 501c3 non-profit organization based in Idaho with a mission "to promote ungulate population recovery in areas negatively impacted by wolves," works closely with IDFG including channeling grant funds into "reimbursements" for wolf harvest.[80]

[Text reads: "Idaho Wolf Trappers Wanted / Foundation for Wildlife Management / www.F4WM.org / Get reimbursed up to $1,000 per wolf & you keep the pelt! / Trappers, Idaho needs your help! / To assist IDFG in managing wolf populations, to save elk, moose and the rest of Idaho's wildlife, and to protect livestock and Idaho's ranching heritage / * Wolf predations on livestock at record highs / * Elk pressured out of back country & down into ranch & farm ground where they are wreaking havoc on crops and fences / * Wolf $'s so high the #1 killer of Idaho wolves is now other wolves / Supported by: / Idaho Cattlemen Association / Idaho Fish & Game Commission / Idaho Fish & Game Department / Idaho Farm Bureau / Idaho Trappers Association / Intermountain Fur Harvesters / Funded By: / Rocky Mountain Elk Foundation / Memberships & Fundraising Banquets / Sportsmen & Concerned Citizens / Private & Commercial Sponsorships / Foundation for Wildlife Management / "We bring those who want wolves managed together with those who have the ways & means to get the job done! / Sign up today at F4WM.org"]

[79] This shift has taken place despite, or indeed perhaps due to, "Californication" (see Cotterell 2014; Peterson 2017).

[80] https://foundationforwildlifemanagement.org/IDFG-Grant.



(B) The Idaho Wolf Depredation Control Board was established by the state legislature through passage of H470 in 2014. This 5-member committee is separate from IDFG, reporting directly to the governor. Note the use of contributions from Idaho Wool Growers Association as a part of the overall fund (Idaho Legislature 2020, 6-140).

5. A time of monsters[81]

Idaho ranchers often repeat the refrain that wolves "aren't going anywhere," that they are "here to stay," "so we might as well live with them" (cf. Fawn 2011). Yet apparent acceptance masks a sense of historic injury, as well as ongoing concerns over the material practicalities and costs of coexistence (cf. Martin, in press B). Wolf return continues to present a "bio-irony," in which conservation success provokes public opposition and even fatal retaliation (Greenough 2003). My aim here has been to consider *why*, deploying a relational approach and drawing insights from political ecology and moral economy to better understand this "surplus antagonism" (Ortner 2006), and the durability of the wolf question a quarter century after reintroduction.

Wolves entered an economic landscape of New West transitions, anxieties over rural gentrification, and industry uncertainty, a context essential for understanding operator attitudes and practices vis-à-vis wolf return. By focusing on the uneven and situated experience of the resource user, we see how broader socio-economic pressures provide the lens through which wolf return is viewed and set limits on producers' adaptive capacity. Environmental organizations' deployment of wolves as part of ongoing legal-political struggles over land use further contributes to wolves' monstrousness and make them a target for social reaction. Groups like WWP frame conservation and rural livelihoods as fundamentally incompatible and seek to enact this wilderness ideology – itself rooted in contested assertions around range ecology (Holechek, et al. 2006; Sayre 2017; Brugger, et al. 2019) – through litigious campaigns. Such efforts have resulted in blowback, as populists and politicians draw on wolves' associations to promote regulatory rollback and further stoke the fires of the culture wars (cf. Wuerthner 2020).

Although these might be crudely thought of as "objective" and "subjective" conditions, I have instead stressed the interpenetration and historical co-production of these dynamics as overdetermining the wolf question (cf. Carr 1961). While economic factors are important – and likely more so than ecological factors when considering human-carnivore conflicts (Young, et al. 2015) – such concerns must be understood more relationally and holistically. Anti-wolf sentiment cannot be understood merely or even primarily as a biosecurity risk (to be solved by a technical fix), nor as some holdover from the past (to be dispersed through inevitable generational progression), nor rooted in some unresolvable cultural-identitarian opposition or material incompatibility (necessitating the removal of one or the other, rancher or wolf). Rather, through the interplay of historical context and contemporary enrollments, the wolf has been *made into* a terrain over which struggles to define land use and regional futures are waged. This highlights the fundamental relationality of risk perception and challenges the sometimes too-clean distinction between "human-human" and "human-wildlife" conflict proposed in the HWC literature (Redpath, et al. 2015; Frank & Glikman 2019; cf. Margulies & Karanth 2018; Mason, et al. 2018). Indeed, those who express anti-wolf sentiments often do so in ways that make clear the inseparability of material and meaningful, with wolf impacts only comprehensible and actionable from a situated perspective and amid a broader set of relations.

Work on rewilding has largely elided the phenomenological experience of residents of rewilded landscapes (cf. Drenthen 2018a; b). Wolves enter – and modify – pre-existing relations and patterns on an always-already social landscape. Not only do wolves affect the behavior of ungulates and

[81] This phrase comes from Žižek's liberal paraphrasing of Gramsci: "La crisi consiste appunto nel fatto che il vecchio muore e il nuovo non può nascere: in questo interregno si verificano i fenomeni morbosi piú svariati." (The crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum a great variety of morbid symptoms appear.) (Gramsci 1971; Žižek 2010)

broader ecosystems, they also modify how human groups think about and interact with others and their environment. Rewilding and HWC are thus social "all the way down," and inextricably political: as wildlife are deployed in socio-environmental conflicts, they become bound up with questions of land politics: of who and what belongs, who decides, and who reaps the benefits of land use transformation (cf. Robbins & Moore 2013).

In the current moment of ongoing regional transformation, rural populism, and regulatory rollback, the wolf question extends far beyond the animals' material impacts, becoming a lens onto and front in struggles over land use change and potential futures. Killing wolves becomes conceptualized as a repudiation – of the "liberal establishment," environmentalists, urbanites, and the government – while anti-wolf positioning becomes associated with group identity and authenticity. New West anxieties articulate with neoliberal deregulation and white nationalist "myth-mongering" (Brown 2018, 74), with wolves playing the role of foreign monster allied with outsider threats (cf. Pulido, et al. 2019; Berlet & Sunshine 2019). As such, the wolf is an extreme instance in a long line of animal-related conflicts that, in their outward manifestations, disguise more complex struggles over political economic change – with non-humans bearing the brunt of human reaction (cf. Thompson 1975; Jacoby 2003; Prudham 2005).

The wolf thus raises an important political question: how *should* environmentalists or progressives understand and relate to the people who bear the costs and consequences of economic transition and conservation? In the absence of a political engagement that speaks to the concerns of local people, fear-based narratives and a paranoid style of politics are able to gain ground, and otherwise fringe voices gain an audience (cf. Van Sant & Bosworth 2017; Montenegro de Wit, et al. 2019). In this analysis, the approach of groups like WWP do not come off looking well. Rather than improving prospects for conservation, such efforts undermine their own purported aims by reproducing an oppositional politics that hinders on-the-ground efforts at coexistence with wildlife (Charnley, et al. 2014; LeMenager & Wisiger 2019; Martin, in press B). These groups present themselves as embattled heroes fighting the good fight against private interests and state agencies, yet their practices help drive the very dynamics that allow for the continued scapegoating of wolves by right-wing politicians by manifesting right-wing conspiratorial narratives around environmentalism and the federal government – taking jobs, freedoms, and lands; or, alternatively, life, liberty, and property.

The point, against those who would perhaps misinterpret this argument, is not to endorse anti-wolf politics, nor defend practices of livestock production that have led to environmental degradation or wildlife removal. There are many open questions and fair critiques around the appropriate geography of grazing, contemporary ranching practices, and the structure of agricultural subsidies. Reaction and resistance to the reconfiguration of land access and use, following Polanyi, has no necessary political valence (1944; cf. Fraser 2013); in the American West, community responses to top-down imposition have at times taken highly reactionary, even xenophobic forms (cf. Hays 1959; Fortmann 1990; McCarthy 2002; Prudham 2005). My aim is not to romanticize or over-simplify these "from below" responses, nor to be an "apologist" for the ranching economy, as one of my informants cautioned. Rather, the intent is to more clearly understand the historical emergence and specific character of anti-wolf sentiment in the present, and through this to identify opportunities for transformation (cf. Sayre 2004).

In contrast to the "radical environmentalism" of WWP and their ilk, since the 1990s we have also seen the emergence and proliferation of adaptive and collaborative "radical middle" efforts around public lands governance and a variety of challenging environmental issues around the West, efforts that have sought to overcome polarization and preconceptions, finding common ground

across stakeholder groups and working together toward practical, "win-win" solutions on shared landscapes (Charnley, et al. 2014; LeMenager & Weisiger 2019; cf. Rosenzweig 2003; Treves, et al. 2006; Martin, et al. 2019). Groups like the Wood River Wolf Project have demonstrated how rural livelihoods might share space with wild coinhabitants, but such efforts are undermined/hindered by distrust, contrary policies, and broader political economic pressures (Martin, in press B). Getting to convivial thriving in the "Next West" (Büscher & Fletcher 2019; 2020; Lybecker, forthcoming; cf. Baden & Snow 1997) will require serious engagement, rather than dismissal, of locals' interests and anxieties, along with a consideration of socio-environmental conditions, power, and politics – questions ripe for further political ecological attention.

6. Conclusion: A Time of Monsters

"The old world is dying, and the new world struggles to be born: now is the time of monsters."
– Antonio Gramsci, as loosely translated by Žižek (2010)

I never did see a wolf in Idaho.

No doubt I had moments when I got close – when they were just over the next ridge, missed just by chance, as when on howl surveys with Wood River Wolf Project staff in the backcountry beyond Sun Valley. Or, as so often happens with fieldwork, when an opportunity fell through at the last minute, like when I was unable to join an IDFG biologist on a wolf survey in the Lowman area northeast of Boise (he told me they almost always saw wolves there). Even when I visited Yellowstone National Park, spending time with a crowd of wolf pilgrims looking up through binoculars and scopes at a supposed den in the Lamar Valley, the wolves refused to appear for me.

Yet in many ways this is fitting. As alluded to in the title of this dissertation – "In the Shadow of the Wolf" – I am less interested in *Canis lupus* as such than in wolves' broader *political presence*, the shadow they cast over this region, an impact that extends far beyond the material animals themselves. The wolf question – the heated and enduring socio-political controversy surrounding this species – is about wolves *in relation with* and as lens onto myriad other regional concerns, including deep tensions around land use, governance, and conservation. As wolves continue to recover – expanding under their own power from Idaho, Montana, and Wyoming into Oregon, Washington, California, Colorado, and beyond – they enter sometimes heavily human-modified landscapes, transgressing conceptualizations of "the wild" and its appropriate placement, and heightening extant struggles over land, economy, culture, and belonging.

The experience of the WRWP shows that coexistence – even between the historically counterposed wolves and sheep – is possible. Yet the Project also highlights the profound importance of social and political economic processes for setting conditions of possibility and structuring actors' understandings and responses. Wolf management in Idaho at the turn of the 21st century, bound up as it is with regional transformations and the contentious politics of the New West, provides important lessons for approaching human-wildlife conflict in shared, working landscapes around the world. As we confront the challenges of conservation and land use change in the 21st century, our understanding of the wolf question informs broader questions of shared space – between humans and nonhumans, and between differing conceptualizations and interests in environmental futures.

I began this dissertation with two central and interlinked questions around wolf conflict and coexistence. First, what I have termed the "wolf question": How can we account for the durability and seeming disproportionality of political polarization and conflict surrounding gray wolves in the American West, in spite of the availability of compensation for livestock losses, preventative techniques to reduce depredation, and in contrast with attitudes toward other threats to livestock and livelihood? Put another way, why does the wolf still cast a monster's shadow? And second, what is the potential for strategies of nonlethal deterrence and collaborative coexistence as pursued by the Wood River Wolf Project? How have they achieved what successes they have, what has been learned over a decade of efforts, and what are the challenges to sustaining and generalizing this model. In other words, what might it take for wolves and people to get along? If the first question focuses on the level of historical political economy and the discursive production of the wolf in the American West, the second considers conservation practice and politics as situated in the context of my fieldwork – yet these two are dialectically intertwined, and answering the latter requires that we address the former.

The chapters in my dissertation each explore different aspects of these questions, helping to account for the *overdetermination* of wolf conflict and identify key obstacles to conviviality – with an aim of transformation. Throughout, I have emphasized three central themes:

First, *the costs of conservation*: As one USFS District Ranger noted regarding nonlethal efforts, "If it's worth doing, then it's worth doing – but it's gonna cost money." In parallel with insights from agroecology, we know *how* to achieve "...coexistence, not exploitation" (Altieri 1995, 379) – the WRWP and others pursuing coexistence between megafauna predators and livestock have brought traditional practices together with modern technology and ecological knowledge, demonstrating the functionality and effectiveness of deterrence. Yet the model struggles with a lack of adequate support – resources, labor, political will –necessary to scale up from niche demonstration effort, and to transition regional practices from conventional to predator-friendly alternatives. In the absence of livestock producers voluntarily shouldering these costs – which, under competitive conditions of capitalist political economy and other pressures, appears unlikely – there is a need for some kind of policy intervention to move away from currently dominant approaches toward sustainable alternatives (cf. Meek 2016; Malcom, et al. 2019).

Second, *the effects of contrary policy*: The obstacles to such a transition go beyond monetary costs, however, and include policies and norms that undermine and stand in the way of coexistence. In Idaho these take the form of subsidized lethal control through USDA APHIS Wildlife Services, the promotion of virtually year-round hunting through IDFG, and the political deployment of wolf issues as a pawn within state-level politics. While the WRWP and many ecologists have emphasized technical interventions around depredation as a biosecurity question (cf. Wilkinson, et al. 2020), at least equally important are those "human dimensions" so often alluded to in the human-wildlife conflict literature – which extend beyond and structure the practices of managers, producers, and environmentalists on the ground. These include state- and federal-level policy, economic (re)distribution, as well as deeper histories and insecurities, political and economic inequalities, and the enrollment of wildlife toward divergent political ends.

Third, *the pitfalls of environmental politics*: While attacks on wolves and other wildlife by right-wing populists and politicians is certainly a cause for alarm, particularly as it articulates with efforts to roll back environmental regulation at the national level, they are not the only ones playing on the political-symbolic utility of wolves. In line with a political ecology tradition, my arguments here have simultaneously been aimed at environmentalists, whose deployment of wolves' symbolic association with wilderness as part of broader struggles over land use and regional futures – turning them into a force for dispossession – has made the animal a target for sometimes violent reaction and undermined possibilities for coexistence through co-adaptation (cf. Carter & Linnell 2016). The problems of top-down environmental regulation and coercive conservation – including the potentially harmful social reactions such efforts provoke – have long been recognized by political ecologists and environmental historians (e.g. Hays 1959; Peluso 1993; Neumann 1998; Greenough 2003; Jacoby 2003). Insights from such an engagement (the critical "hatchet") however, must be paired with an emphasis on identifying openings for transformation, for ways things might be different (a normative "seed") (Robbins 2004). Throughout the dissertation, then, I have attempted to hold critique together with the promotion of political alternatives adequate to these regional challenges.

As I allude to in the epigraph, the American West of the late 20th and early 21st centuries is a place of *monsters*. Wolves certainly transgress human spatial understandings and can be materially challenging to live with, but they are only made monstrous in relation to a broader set of socio-natural relations (cf. Philo & Wilbert 2000; Smith 2011). The "monstrousness" of the New West

come from the tensions of place and political economy, conflicts and contradictions bound up with regional transformations that persist as long as the form of the "Next West" remains uncertain and contested (cf. Baden & Snow 1997; Lybecker, forthcoming). Wolves, as I have sought to show above, are but one issue among a suite of regional challenges (Martin, et al. 2019).

One of these in particular – the grazing of privately-owned livestock on public lands in the American West – remains a central and contentious question into the 21st century. Between efforts by the Bundy family and their allies around the Malheur takeover, moves by the U.S. Forest Service and Bureau of Land Management to reconfigure planning toward stakeholder collaboration and adaptive management (much hindered by the current administration), and ongoing polarization and distrust resulting from environmental litigation and, increasingly, right-wing attacks on the Endangered Species Act, the "range wars" appear anything but resolved, even as they articulate with national and global patterns of reactionary rural populism (McCarthy 2002; 2019; Walker 2018).

Tragedy and Commoning in the American West

This dissertation has, in many ways, been an extended engagement with American environmentalism, and in a closing rumination I wish to turn away from wolves to trace this nexus of livestock, land, and politics: considering some of the larger patterns of conservation by thinking together a few key moments that remain interlinked in places like the rural West. Below, I briefly trace the classic story of John Muir and Gifford Pinchot, complicated by the addition of John Minto, Oregon sheep farmer and antagonist of Muir, to present a now-familiar triadic tension between preservation-minded environmentalists, "wise use"-minded agencies, and utilization-minded private operators. I then read this trio against another classic of American environmental politics, Garret Hardin's "tragedy of the commons" (1968). While Hardin's "solutions" – privatization or "coercion" – mirror the polarized arguments of public lands debates today, western socio-ecological realities, including complex cross-boundary processes and political economic pressures, have sparked experiments in "radical middle" collaborative management that both build on but also subvert Pinchot's vision of conservation (cf. Charnley, et al. 2014). These might be usefully put into conversation with a literature on the *commons* and, more recently, "commoning," to better understand and inform these efforts with an alternative political narrative (cf. Ostrom 1990; Bollier 2016; Turner 2016). I thus use the question of livestock grazing and land management to gesture toward the possibilities of a "sustainable use" that takes seriously the problems of an unexamined wilderness ideology, on the one hand, and the pressures of capitalist political economy, on the other, toward the promotion of more collaborative and convivial futures.

1. The origins of American conservation

Widely told is the turn-of-the-last century origin story of American conservation as an ideological dialogue between Gifford Pinchot and John Muir, each representing a contrasting policy approach toward nature. As the first head of the U.S. Forest Service, Pinchot emphasized "wise-use" *conservationism*, what we today might call "sustainable development," against those who would "lock up" forest resources from economic use. Muir, the "savior of Yosemite," naturalist and founder of the Sierra Club, promoted *preservation* of key wilderness sites through government management, shielding them from the "gobble-gobble school of economics" on the basis of spiritual and aesthetic values (DeLuca & Demo 2001, 550; Meyer 1997, 279). Left implicit in this binary narrative is the role of the *resource user* (to think in political ecology terms; cf. Blaikie & Brookfield 1987). We might complete the dynamic with the addition of John Minto, Oregon sheepman and state politician who

helped establish the Merino sheep industry in the Willamette Valley and served on the State Board of Horticulture.

Minto participated along with Muir in the early debates on forest management in the Pacific Northwest, including disputes over sheep grazing in the Cascade Range (culminating in the contentious National Academy of Sciences Report of 1897, wherein we find the infamous "hoofed locusts" slur for sheep attributed to John Muir himself) (NAS 1897; Rakestraw 1958; cf. Sayre 2017).[82] Thus we have the now-familiar triadic tension – between utilization-minded private operators, preservation-minded environmentalists, and "wise use"-minded agencies – seen in environmental management across the region today (figure 1).

Figure 1: A triadic tension

John Minto	Resource users	Utilitarianism
John Muir	Environmentalists	Preservationism
Gifford Pinchot	State agencies	Conservationism

Although on opposing sides of the debate, the two Johns also had much in common: both were of Scottish ancestry, migrating to the U.S. at an early age; both were self-purported lovers of wilderness and its "effect on the human spirit;" and both wanted the public land system revised toward a more rational management of natural resources (Rakestraw 1958). Their point of difference was in *how*: Muir looked to the federal government for centralized regulation of the public domain, while Minto looked to Australia's example of long-term lease with permission to purchase, feeling that such a system would promote "improvement" and "rational land use" by the lessee. The Department of the Interior, faced with "conflicting local interests and contradictory assertions," was caught between the two – relying on Muir's (not unbiased) reports while faced with Minto's observation-backed disagreements – resulting in a subsequent rift between the schools of Pinchot and Muir (Rakestraw 1958, 373, 377).

Muir's vision of *wilderness* frames nature as sublime spectacle, separated from and largely devoid of humanity. Wilderness discourse naturalizes its own construction, obscuring both historical and ongoing constitutive exclusions – predicated as they are on a binary logic of nature/culture, and hinging on Eurocentric understandings that privilege classed and raced relationships with the environment (Cronon 1995; Spence 2000; DeLuca & Demo 2001). Muir hoped to protect particular areas from the "ravages of man" – including logging, farming, grazing, and hunting – yet was conveniently blind to impacts from (and even encouraged) other uses, including recreation and the construction of infrastructure to facilitate tourism. Such a position was carried forward by many environmental organizations – "for whom wilderness is not a place to be worked but a recreational fantasy to be consumed" (DeLuca & Demo 2001, 553; cf. Neumann 1998) – and set precedent for an ecotourism-orientation and the litigious environmental politics explored in chapters 4 and 5. Wilderness, as many critical scholars have argued, remains a difficult-to-challenge "complexity

[82] A broader exploration of this history is, unfortunately, beyond my scope here. In addition to Sayre's treatment (2017), see also Wentworth (1948); Oliphant (1968); and McGregor (1989).

blinder" in much of environmental politics (cf. DeLuca & Demo 2001, 554; Nelson & Callicott 2008; Robbins & Moore 2013).[83]

2. The so-called tragedy of the commons

I want to next read this triad of Minto, Muir, and Pinchot with and against another foundational narrative of American environmental politics, Garret Hardin's "tragedy of the commons." Hardin's 1968 essay in *Science* describes the problems of scarcity, resource use, and environmental degradation. Although subsequently laid bare by extensive critique from institutional and environmental economists and political ecologists, particularly in the work of Elinor Ostrom (1990), Hardin's neo-Malthusian framework remains a powerful narrative in much of global conservation (Barrett & Mabry 2002). The basic argument goes that, left to their own devices and following their own self-interest, people will (rather mechanistically) overexploit a common resource to their common ruin. Hence, Hardin goes on, the necessity either of private property, where possible, or some form of regulatory control ("coercion") in order to prevent degradation.

As with Malthus' own writings, much of the argument here is unconstrained by evidence, presented as a sort of back-of-the-envelope calculation that appeals to the common sense understandings of the audience, but which collapses under critical scrutiny (cf. Harvey 1974).[84] Hardin uses the conceit of a shared cattle pasture, drawing on an 1833 pamphlet from William Foster Lloyd,[85] but his target is the so-called "population problem." The general argument, however, informs the subsequent development of environmentalism, particularly in the U.S., in both its neoliberal and neoprotectionist forms (cf. Igoe, et al. 2010; Büscher & Fletcher 2020).

Figure 2: Tragedy's "solutions"

John Minto	Resource users	Utilitarianism	Privatization
John Muir	Environmentalists	Preservationism	Regulation
~~Gifford Pinchot~~	~~State agencies~~	~~Conservationism~~	

What I find interesting is how well Hardin's "solutions" map onto Muir and Minto's positions (Pinchot's vision is, notably, left out) (figure 2). Minto favored long-term leases with permission to purchase on the basis of the supposed individual incentive to manage property for long-term beneficial use – an argument repeated in discourses of stewardship and private lands conservation

[83] Again, it is beyond the scope of this dissertation to consider the broader construction and deconstruction of wilderness and its consequences – including questions of in/exclusion, racialized space, and historic dispossessions – to say nothing of broader questions of human-nature relationships (see Nash 1973; Williams 1980; Smith 1984; Guha 1989; Oelschlaeger 1991; Cronon 1995; Spence 2000; Finney 2014). Notably, it is only in this year (2020), amid a broader set of national conversations, that the Sierra Club has apologized publicly for John Muir's own racism (AP 2020; Fox 2020).

[84] As with Malthus, Hardin's narrative obscures the author's implicit politics: with the former, a profoundly classed vision and argument against social welfare in the form of the Poor Laws (Foster 2002); with the latter, a white nationalism once again on the side of the rich (Mildenberger 2019).

[85] It would be interesting to consider how livestock and the threat of overgrazing runs throughout the history of environmental thought: in Hardin's cattle, in Muir's concerns around sheep, going back to British enclosure (Marx 1867 (chapter 27, "Expropriation of the Agricultural Population from the Land"); Polanyi 1944) (cf. Sayre 2008; 2017).

around the West, but also in an extreme form in the movement for public lands devolution and privatization (cf. Coggins 1996; Edwards 2017). Notably, such arguments are not dissimilar to those for "green development," "market environmentalism," or "neoliberal natures" – including ecotourism and marketization of ecosystem services – which have been extensively critiqued by political ecologists and their ilk (cf. McAfee 1999; Bakker 2005; O'Neill 2007; Dempsey & Suarez 2016). Muir's position is carried forward by ENGOs, particularly following the significant expansion of the environmental regulatory apparatus in the 1960s and 70s (see chapter 4). With increasing professionalization and institutionalization, ENGOs were able to "complement" a vision of the state as regulator with a strategy of litigation, aiming to protect lands and resources from private actors who might degrade them, and to hold the state accountable to its own laws. Yet this "rule of experts" (cf. Mitchell 2002) – of top-down centralized decision-making and control – was already at odds with local sentiments, a source of populist contestation against "federal tyranny" (cf. Hays 1959; McCarthy 2002; Jacoby 2003).

3. Commons, commoning, and the radical center

Against Hardin's "solutions," research on the *commons* has sought to highlight an alternative path through community management of lands and resources. Ostrom's work, in particular, explores myriad cases of diverse, sustainably managed commons from around the world that provide empirical refutation of Hardin's argument. What is described in "The Tragedy of the Commons" is not a commons at all, but rather an open access regime; actually-existing and historical commons, in contrast, have been well-regulated social-ecological systems, maintained over long time-scales through communal regulation of resource access and use (Ostrom 1990; 2009; Wall 2014).

A growing literature around "commoning" has also moved to not just think of commons as historical but as (re)produced in the present (Bollier 2016; Turner 2016), mirroring Marxian efforts to conceptualize enclosure and primitive accumulation as ongoing rather than (only as) antecedent (Luxemburg 1913; de Angelis 2004; Harvey 2005; cf. Polanyi 1944; Marx 1867). These efforts are valuable for the application of commons/commoning in the American West, where patterns of land and resource use rooted in settler colonialism are certainly not historical commons – that being excised through genocide and displacement of indigenous relations of environmental management (see White 1988; Cronon 1992; Hinton, et al. 2014).[86] However, a commoning framework can help clarify and develop the contestation and collaborative management efforts seen in the American West over the 20th and early 21st centuries (Fortmann 1990; Jacoby 2003; Charnley, et al. 2014).

So-called "radical center" or "radical middle" efforts have sought inclusive, pragmatic solutions around a range of long-standing socio-environmental conflicts in the region since the early 1990s, paralleling international efforts to rethink "fortress conservation" through community-based natural resource management (cf. Brosius, et al. 2005). These diverse experiments have promoted adaptive, collaborative, and landscape-scale conservation through trust-building and participation, moving from polarization and antagonism to common ground and practical ways forward (Charnley, et al.

[86] Although the public domain lands of the American West might be thought of as a commons in some ways – shared lands held in trust for the broader public – a commons framework stands in contrast with all three of the figures noted above. Contra Muir, a commons is often a working landscape; contra Minto, it is not governed as private property or extraction but rather for usufruct; and contra Pinchot, the commons are generally governed through bottom-up, community organizations rather than top-down technocratic management (see also Fortmann 1990; Sheridan 2001).

2014; LeMenager & Weisiger 2019). The Wood River Wolf Project itself comes out of this tradition, as demonstrated by its dual commitment to wolf-livestock coexistence and a collaborative model.

Many of these American efforts tip their proverbial hat to the Aldo Leopold's "land ethic," an expanded, more-than-human ethical community through a more relational, bottom-up environmental stewardship approach – in contrast with both Muir's wilderness philosophy and a centralized state-regulatory approach to conservation (Leopold 1949). While there are clear parallels between Leopold's commitments and commons/commoning, as Harvey grimly notes the land ethic is "a hopeless quest in a bourgeois society where the community of money prevails… [and] would necessarily entail the construction of an alternative mode of production and consumption to that of capitalism" (Harvey 1996, 120). Indeed, in my own research I repeatedly saw the tensions between stewardship efforts and the logics and pressures of capitalist political economy, raising questions around the need for more explicit engagement with questions of property, competition, and policy as noted above. While radical center efforts thus remain constrained by the larger capitalist order, a commons/commoning analytic can help clarify these challenges, provide an alternative political discourse, and point toward strategies for transformation. [87]

4. Aspirations and alternatives

The return of wolves is not, ultimately, in the economic interest of ranchers. While wolf-livestock coexistence is practicable, depredation represents an added cost and concern for producers, and to pretend otherwise would be disingenuous. Yet wolf return may also, indirectly, be a boon. As I have argued throughout the dissertation, the wolf question raises questions, both material and meaningful, of regional and global significance: the place and placing of the wild, the sustainability of rural livelihoods, of land use change and rural futures. My aim with this dissertation has been to clarify the key dynamics of wolf conflict and the challenges for coexistence, and in so doing to point toward political alternatives. While the wolf might not be the rancher's best friend, by forcing the issue, by making us ask what coexistence would *actually take*, wolves may inadvertently create an opening for transformation. In its commitment to collaborative coexistence we see in the Wood River Wolf Project the germ of a different future: of shared landscapes, collaboratively managed, with space and support for both conservation and rural livelihoods in the 21st century – something very much in the interest of producers themselves.

In the context of once-again newsworthy conflicts over public lands and the continuing political significance of rural anxieties (cf. Walker 2018; Wuthnow 2019), we may be facing a new American agrarian question (cf. Kautsky 1899; Bernstein 2006): How *should* progressives, environmentalists, and policymakers understand and politically relate to those whose lives and livelihoods are disrupted by economic transition and conservation policy? The wolf question has always been about *belonging* – who and what belongs in which spaces, and who decides? In the contentious landscapes of the New West, both wolf and rancher struggle against those who would see them gone. Yet the fact of collaborative coexistence – of ongoing on-the-ground efforts in spite of significant ideological and material pressures – shows the strength and potential of alternative understandings and approaches.

For now, commoning the West is more aspiration than reality: a direction to strive toward, as well as a lens through which to understand challenges on the ground. But the framework also provides a valuable political alternative in a region so often mired in libertarian conservatism, right-

[87] Notably, these questions are very much present within discussions of commoning outside of the American West, including whether such efforts must ultimately challenge the rule of capital or if they might exist as lifeways otherwise (cf. Gibson-Graham 1996; de Angelis 2004; Nightingale 2019).

wing populism, and xenophobic reaction. I submit that my dissertation research suggests commoning as a positive vision that speaks to local concerns, promotes conservation in line with the best of a stewardship-minded land ethic, and better identifies the political economic challenges in the region today. Ideological commitment to private property and "rugged individualism," I argue, stands in tension with the experiences of the region's residents who more and more feel the sting of market logics and uneven development. While commoning may well require the "creation of new traditions" (Wall 2014, 127; see also Williams 1980, 85), it does so on the basis of material interest, longstanding efforts on the ground, and out of the failures of the "solutions" on offer.

To sustainably live with the wolf over the long term and landscape scale will require a conservation grounded in commoning and collaboration. This, I would argue, is Büscher and Fletcher's vision of convivial conservation (2020), one that takes seriously the political and economic hurdles to its achievement, and which pursues a rewilded world that does not counterpose the wild and the human but rather promotes our mutual flourishing. The Wood River Wolf Project has shown that coexistence, between predators and livestock as much as between conservation and rural livelihoods, is possible. But these efforts need broader societal support and political will – and, perhaps, structural transformation – to help break from historical patterns of thinking and doing.

In June of this year (2020), in spite of the pandemic that led to the cancellation of the annual Allen & Company retreat as well as the Trailing of the Sheep festival (their 38th and 24th years, respectively) (Dee 2020; Melville 2020), the Wood River Wolf Project began its 13th field season, with a new field manager and returning Project Coordinator (Express Staff 2020). While many of the issues raised throughout this dissertation no doubt remain, so too do people on the ground committed to collaborative coexistence – protecting the lives of wolves and livestock, and building the groundwork for a convivial future.

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Appendices

Permissions to include previously published and co-authored material (attached)

Request for Permission to Include Previously Published or Co-Authored Material *(Note: included here for reference only)*

From: Nathan F. Sayre, Professor, Department of Geography

To: Associate Dean of the Graduate Division for Academic Affairs
Graduate Services: Degrees, 318 Sproul Hall

Date: 15 July 2020

Re: Jeff Vance Martin, SID 17221768, j.vance.martin@berkeley.edu

I am writing to ask for permission for the dissertation of Jeff Vance Martin to use coauthored and/or previously published material, as follows:

> **Martin, J. V.** In press. "Between Scylla And Charybdis: Environmental Governance and Illegibility in the American West." *Geoforum*. https://doi.org/10.1016/j.geoforum.2019.08.015.
>
> **Martin, J. V.**, K. Epstein, N. Bergmann, A.C. Kroepsch, H. Gosnell, P. Robbins. 2019. "Revisiting and Revitalizing Political Ecology in the American West." *Geoforum* 107: 227-230. https://doi.org/10.1016/j.geoforum.2019.05.006.
>
> **Martin,J.V.** In press. "Peace in the Valley? Lessons on Collaborative Coexistence from the Wood River Wolf Project." *Conservation Science and Practice*.

Martin was the sole author of two of the published articles and the lead author of the third. That is to say, he was involved in the research in ways that make it appropriate to claim a role as author of the work as an original contribution to research. The previously published work forms part of a larger coherent argument appropriate for the graduate degree for which the student is a candidate.

Statements agreeing to the use of co-authored work are included with this letter, along with copies of the title pages of the three articles.

Please do not hesitate to contact me directly if you have any questions. Thank you.

Sincerely,

Nathan F. Sayre
Professor

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Critical review

Revisiting and revitalizing political ecology in the American West

Jeff Vance Martin[a,*,1], Kathleen Epstein[b,1], Nicolas Bergmann[b], Adrianne C. Kroepsch[c], Hannah Gosnell[d], Paul Robbins[e]

[a] University of California, Berkeley, Department of Geography, 505 McCone Hall #4740, Berkeley, CA 94720, United States
[b] Montana State University, Department of Earth Sciences, Traphagen Hall Room 226, Bozeman, MT 59717, United States
[c] Division of Liberal Arts & International Studies, Colorado School of Mines, Stratton Hall 403, Golden, CO 80401, United States
[d] Oregon State University, College of Earth, Ocean, and Atmospheric Sciences, Wilkinson 260, Corvallis, OR 97331, United States
[e] University of Wisconsin-Madison, Nelson Institute for Environmental Studies, 122 Science Hall, Madison, WI 53706, United States

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ABSTRACT

Political ecology, initially conceived to better understand the power relations implicit in management and distribution of natural resources in the developing world, came "home" to the American West in the 1990s and 2000s. This groundswell of research did much to problematize socio-environmental conflicts in the region, long typified by tensions over land and resources, identity and belonging, autonomy and authority. Since first touching down in the West, however, the "big tent" of political ecology has only grown bigger, incorporating new perspectives, epistemologies, and ontologies. At the same time, the nexus of environment and society is perhaps even more salient today, amid a regional conjuncture of populist revolt, climate change, and rapid political economic transformation. Here we reflect on three longstanding regional concerns – energy development, wolf reintroduction, and participatory governance – leveraging the pluralism of contemporary political ecology to better understand their contemporary incarnations. In so doing, we highlight the need to bring together insights from both "traditional" approaches and newer directions to better understand and engage contemporary challenges, with their heightened stakes and complexity. Such an approach demonstrates what we might learn about global processes in this place, as well as what insights regional praxis (often woefully provincial) might gain from elsewhere – new ways of seeing and doing political ecology. Our goal is to generate discussion among and between political ecologists and regional critical scholars, initiating new collaborative engagements that might serve the next wave of political ecology in the 21st century American West.

1. Political ecology in the west: The next generation?

Typified by tensions over land and resources, identity and belonging, autonomy and authority, the American West has long been theater to novel and dramatic couplings of the political and ecological. The challenges of theorizing and living in this region inspired a groundswell of research from the field of political ecology in the 1990s and early 2000s (e.g. McCarthy, 2002; Walker, 2003). Today, the dynamics that inspired political ecology to make the "intellectual journey home" persist (Fortmann, 1996, 545), but with heightened stakes and complexity. Unconventional forms of energy development eat away at agricultural land and wildlife habitat, exacerbating the longstanding challenges of multiple use in patchwork landscapes. Unprecedented wildfire seasons and flooding – driven in part by climate change – threaten public health, lives, and property as well as governance models confounded by transboundary ecological processes. Unexpected outcry – from the armed takeover of the Malheur Wildlife Refuge in 2016 to protests at Portland ICE headquarters in 2018 – highlight the perennial question of who and what belongs in the West, as well as contemporary articulations with populist revolt and regional anxieties over economic and environmental futures.

Since first touching down in the region, political ecology itself has evolved and expanded from its historical materialist roots to incorporate insights from multiple genealogies. Poststructural insights from feminist and postcolonial scholarship have troubled the nature and production of knowledge (e.g. Whatmore, 2002), but so too has engagement with physical science through STS and, more recently, critical physical geography (Lave et al., 2014). As emerging scholars

* Corresponding author.
E-mail addresses: j.vance.martin@berkeley.edu (J.V. Martin), kathleenepstein@montana.edu (K. Epstein), nicolas.bergmann@msu.montana.edu (N. Bergmann), akroepsch@mines.edu (A.C. Kroepsch), gosnellh@geo.oregonstate.edu (H. Gosnell), director@nelson.wisc.edu (P. Robbins).
[1] These authors contributed equally to this work.

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CONTRIBUTED PAPER

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Peace in the valley? Qualitative insights on collaborative coexistence from the Wood River Wolf Project

Jeff Vance Martin

Department of Geography, University of California, Berkeley, California

Correspondence
Jeff Vance Martin, 505 McCone Hall #4740, Berkeley, CA 94720-4740.
Email: j.vance.martin@gmail.com

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UC Berkeley Department of Geography; The Gray Brechin and Robert Chlebowski Endowed Graduate Student Support Fund in Geography; UC Berkeley Social Science Matrix; UC Berkeley Center for Right Wing Studies

Abstract

Threats posed by wild predators to livestock production have too often resulted in human–wildlife conflict, to the detriment of these keystone species and broader biodiversity conservation. Long-standard practices of lethal control are increasingly seen as costly, controversial, and ineffective, however, with nonlethal alternatives ever more prominent. In addition to assessing these tools' ecological effectiveness, there remains a key role for the social sciences, particularly qualitative research, in identifying obstacles to and opportunities for the long-term sustainability and scaling up of these coexistence interventions. The Wood River Wolf Project (WRWP), a collaboration among ranchers, environmental organizations, and government agencies in Blaine County, Idaho, has pursued coexistence between gray wolves and domestic sheep since 2008, demonstrating and developing nonlethal techniques and garnering regional and international attention as a model for collaborative coexistence. Yet the Project has also struggled with changing conditions and internal challenges. Investigation of this prominent effort—its history and practices as well as the broader socio-political and economic context—highlights the challenges of adaptive governance in the face of reduced capacity and hostile legal-political contexts, while providing important insights for practitioners and policymakers promoting wildlife coexistence in shared landscapes.

KEYWORDS

adaptive governance, American West, convivial conservation, environmental conflict, gray wolves, human–wildlife conflict, livestock depredation, predator coexistence, wildlife management, wolf reintroduction

1 | WOLF CONFLICT AND COEXISTENCE

Threats posed by wild predators to human livelihoods, particularly livestock production, have too often resulted in human–wildlife conflict (HWC) to the detriment of biodiversity conservation (Dickman, 2010; Treves & Karanth, 2003; Woodroffe, Thirgood, & Rabinowitz, 2005). Long-standard practices of lethal control, however, are increasingly controversial and have been shown costly and ineffective over longer timescales (Berger, 2006; Lennox, Gallagher, Ritchie, & Cooke, 2018; Moreira-Arce, Ugarte, Zorondo-Rodríguez, & Simonetti, 2018; Slagle, Bruskotter, Singh, & Schmidt, 2017; Treves,

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Between Scylla and Charybdis: Environmental governance and illegibility in the American West

Jeff Vance Martin

Department of Geography, University of California, Berkeley, 505 McCone Hall #4740, Berkeley, CA 94720-4740, United States

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ABSTRACT

In *The Odyssey*, Odysseus and his crew must navigate the Strait of Messina between two great hazards: the six-headed monster Scylla on one side, and the whirlpool Charybdis on the other. This conceit here guides a critical engagement with scientific knowledge and state power, grounded in the positionality and practices of government agents charged with the management of controversial species and processes in the American West. Based in ethnographic and archival research on wolf-livestock conflict and public lands grazing in Central Idaho, I relate how agents with the U.S. Forest Service and Idaho Department of Fish and Game navigate conditions not of their own choosing. Sailing the "choppy seas" of complex systems and multiple-use mandates, with the "whirlpool" of cuts to capacity on one side and the "monster" of political controversy and litigation on the other, agents appear to collect less or more ambiguous information on their charges, resulting in a partial "blindness" or *illegibility*. Although a rational adaptation to unrealistic expectations, this ignorance is not bliss but rather symptom and source of dysfunction, limiting agents' ability to carry out monitoring, collaboration, and effectively conduct on-the-ground management. Understanding patterns of illegibility requires that we attend both to broader contextual pressures and situated motivations. In so doing, we might account for the seeming disconnect between agencies' stated aims and practices, complicate traditional assumptions of evidence-based scientific management and analyses of bureaucratic rationality and state power, and make sense of the apparent dysfunction around environmental governance in the American West today.

1. Governing on contentious terrain

In *The Odyssey*, Homer describes an episode in which Odysseus and his crew must navigate the Strait of Messina between two great hazards: the six-headed monster Scylla on one side, and the whirlpool Charybdis on the other. I use this metaphor to conceptualize the positionality and choices made by government agents charged with the management of species and environments in the American West amid public controversy and declining capacities.

Environmental governance in the U.S. takes place across a "checkerboard" of land ownership and use patterns and at times overlapping and conflicting agency responsibilities (see Fig. 1, Section 1) – a long-standing instance of the now "increasingly common imbrication of multiple types and scales of authority over given territories" (McCarthy, 2007, 190). Public lands make up more than half of the 11 contiguous western states, much of it managed by the U.S. Forest Service (USFS) and Bureau of Land Management (BLM). Governance of resources and wildlife on these lands, then, make federal and state agencies central – and contentious – players in the region.

Idaho provides an important arena for considering environmental governance: the state is nearly two-thirds public land[1] – much of it managed as "multiple use" working landscapes – and it was one of two reintroduction sites for the gray wolf (*Canis lupus*) in the mid-1990s.[2] Based on research conducted in and around Central Idaho between 2015 and 2017, I focus here on the experience and practices of mid-level career employees of the U.S. Forest Service and Idaho Department of Fish and Game (IDFG), with their respective responsibilities around rangeland livestock grazing (an long-standing but increasingly controversial resource use),[3] and the management of the state's wolf population during and after the transition from federal to state

E-mail address: j.vance.martin@berkeley.edu.

[1] Idaho holds the highest percentage of state land under national forest as well as the largest contiguous federally managed wilderness outside of Alaska (Our Public Lands, N.D.; USFS, 2012; USFS, N.D.).

[2] Wolves were reintroduced through federal action to Yellowstone National Park and Central Idaho in 1995 and '96 (see Fischer, 1995).

[3] Privately-owned livestock have long grazed on the public domain, and since the establishment of the Forest Service have done so through a system of leased allotments (see Rowley, 1985; Sayre, 2017).

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Gmail Jeffrey Martin <j.vance.martin@gmail.com>

Revisiting and Revitalizing: co-author permission

11 messages

Jeffrey Martin <j.vance.martin@berkeley.edu> Tue, Mar 24, 2020 at 12:25 PM
To: Katie Epstein <Kathleen.epstein@msu.montana.edu>, Nicolas Bergmann <bergs456@gmail.com>, Adrianne Kroepsch <akroepsch@mines.edu>, "Paul Robbins, Director, Nelson Institute for Environmental Studies" <director@nelson.wisc.edu>, Hannah Gosnell <gosnellh@geo.oregonstate.edu>

Dear friends,

I hope this finds you all healthy and doing as well as can be expected under these exceptional circumstances! As I'm sure you can relate to, however, work in some form continues -- including me trying to (finally) finish my dissertation and degree.

Berkeley allows for the inclusion of previously published and co-authored material as part of the dissertation, and I would like to include our PE in the West piece as an intentional nod to the value and need for collaboration in our scholarly and other practices. Including it would have the added benefit of providing a sort of open access work-around for our piece through the UC library.

To do so, however, I need a little favor from each of you: a statement granting me permission to use and reproduce the material as part of my dissertation. Email is accepted, so you can just write back to me stating such ("I, (insert name here), give Jeff Vance Martin permission to include the text of our co-authored article as a part of their dissertation.")

Don't hesitate to ask any questions, and I look forward to hearing from you soon!

All the best,

Jeff

Jeff Vance Martin
PhD Candidate, Department of Geography
University of California, Berkeley
j.vance.martin@berkeley.edu, ResearchGate
Pronouns I use: he/him/his or they/them/their

Hannah Gosnell <gosnellh@geo.oregonstate.edu> Tue, Mar 24, 2020 at 12:28 PM
To: Jeffrey Martin <j.vance.martin@berkeley.edu>

Hi Jeff,
Glad to hear you're carrying on. Here's my statement. Take care!!!
Hannah

I, Hannah Gosnell, give Jeff Vance Martin permission to include the text of our co-authored article in GeoForum as a part of his dissertation.

Sent from my iPhone

> On Mar 24, 2020, at 12:26 PM, Jeffrey Martin <j.vance.martin@berkeley.edu> wrote:
>
> [Quoted text hidden]

Nicolas Bergmann <bergs456@gmail.com> Tue, Mar 24, 2020 at 12:31 PM
To: Jeffrey Martin <j.vance.martin@berkeley.edu>
Cc: Katie Epstein <Kathleen.epstein@msu.montana.edu>, Adrianne Kroepsch <akroepsch@mines.edu>, "Paul Robbins, Director, Nelson Institute for Environmental Studies" <director@nelson.wisc.edu>, Hannah Gosnell <gosnellh@geo.oregonstate.edu>

Hi Jeff--

Glad to hear you're almost there! Good luck with the final push.

I, Nicolas Bergmann, give Jeff Vance Martin permission to include the text of our co-authored article as a part of their dissertation.

Warmly,
Nick
[Quoted text hidden]

Jeffrey Martin <j.vance.martin@berkeley.edu> Tue, Mar 24, 2020 at 12:47 PM
To: Katie Epstein <Kathleen.epstein@gmail.com>

Jeff Vance Martin
PhD Candidate, Department of Geography
University of California, Berkeley
j.vance.martin@berkeley.edu, ResearchGate
Pronouns I use: he/him/his or they/them/their

[Quoted text hidden]

Katie Epstein <kathleen.epstein@gmail.com> Tue, Mar 24, 2020 at 12:50 PM
To: Jeffrey Martin <j.vance.martin@berkeley.edu>

Wooo! Go Jeff! This is so exciting and I am honored to be a part of it 

I, Kathleen Epstein, give Jeff Vance Martin permission to include the text of our co-authored article as a part of their dissertation.

Warmly,

KE

[Quoted text hidden]

Adrianne Kroepsch <akroepsch@mines.edu> Tue, Mar 24, 2020 at 12:58 PM
To: Nicolas Bergmann <bergs456@gmail.com>, Jeffrey Martin <j.vance.martin@berkeley.edu>
Cc: Katie Epstein <Kathleen.epstein@msu.montana.edu>, "Paul Robbins, Director, Nelson Institute for Environmental Studies" <director@nelson.wisc.edu>, Hannah Gosnell <gosnellh@geo.oregonstate.edu>

Git ‘er done!

I, Adrianne Kroepsch, give Jeff Vance Martin permission to include the text of our co-authored article as a part of their dissertation.

Adrianne C. Kroepsch, PhD
Assistant Professor, Environmental Governance
Humanities, Arts, & Social Sciences Division
Colorado School of Mines
www.adrianne-kroepsch.com

[Quoted text hidden]

Paul Robbins, Dean, Nelson Institute for Environmental Studies <dean@nelson.wisc.edu> Tue, Mar 24, 2020 at 2:08 PM
To: "bergs456@gmail.com" <bergs456@gmail.com>, Jeffrey Martin <j.vance.martin@berkeley.edu>
Cc: Katie Epstein <Kathleen.epstein@msu.montana.edu>, Adrianne Kroepsch <akroepsch@mines.edu>, Hannah Gosnell <gosnellh@geo.oregonstate.edu>

Very good indeed.

I, Paul Robbins, give Jeff Vance Martin permission to include the text of our co-authored article as a part of their dissertation.

Paul

****

Paul Robbins
Dean, Nelson Institute for Environmental Studies
122 Science Hall
550 North Park Street
Madison, Wisconsin 53706
608-265-5296
dean@nelson.wisc.edu

From: bergs456@gmail.com <bergs456@gmail.com>
Sent: Tuesday, March 24, 2020 2:31 PM
To: Jeffrey Martin <j.vance.martin@berkeley.edu>
Cc: Katie Epstein <Kathleen.epstein@msu.montana.edu>; Adrianne Kroepsch <akroepsch@mines.edu>; Paul Robbins Director, Nelson Institute for Environmental Studies <director@nelson.wisc.edu>; Hannah Gosnell <gosnellh@geo.oregonstate.edu>
Subject: Re: Revisiting and Revitalizing: co-author permission

[Quoted text hidden]

Jeffrey Martin <j.vance.martin@berkeley.edu> Wed, Mar 25, 2020 at 10:23 PM
To: "Paul Robbins, Dean, Nelson Institute for Environmental Studies" <dean@nelson.wisc.edu>
Cc: "bergs456@gmail.com" <bergs456@gmail.com>, Katie Epstein <Kathleen.epstein@msu.montana.edu>, Adrianne Kroepsch <akroepsch@mines.edu>, Hannah Gosnell <gosnellh@geo.oregonstate.edu>

Y'all are awesome, thank you so much!

Take care and healthy,

Jeff

Jeff Vance Martin
PhD Candidate, Department of Geography