DISSERTATION

WILDLIFE GOVERNANCE IN AN ERA OF SOCIAL CHANGE:

HOW SCIENCE, POLITICS, AND CULTURE INFLUENCE CONSERVATION GOVERNANCE

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Summer 2020

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ABSTRACT

WILDLIFE GOVERNANCE IN AN ERA OF SOCIAL CHANGE:

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Wildlife conservation faces unprecedented ecological challenges in the years ahead. But it is the human dimensions of conservation, from competing values to inequities in access to power, that pose the most significant threat to these efforts in the near term. As values toward wildlife shift in response to modernization and more people become engaged in political activism around conservation issues, wildlife organizations in the public and non-profit sector face calls for governance reform to bring a broader diversity of the public into conservation efforts. Such inclusive and pluralistic models of conservation governance, however, mark a significant divergence from technocratic approaches of the past that prioritize input from technically trained experts over members of the public and root almost exclusively in domination ideologies. The resulting conflict between wildlife conservation centered on science and expertise and the democratic belief that all people should have a say in the management and protection of their natural resources marks a significant contradiction at the heart of wildlife conservation. Assessing the potential for achieving more participatory conservation within this frame requires a deeper understanding of the cultural, social, and political drivers of technocratic governance and how both internal and external factors serve to reinforce these political practices. In this dissertation, I draw out the historical, institutional, and cultural foundations of technocracy in wildlife conservation and their implications for achieving a participatory turn. In Chapter 2, I outline how historic paradigms for scientific expertise and domination values in U.S. wildlife management shapes the frame through which practitioners perceive their organizations as adaptable and accountable and ultimately influence perceptions of the need for change. In Chapters 3 and 4, I explore how existing governance modes are culturally reinforced, first through an internal "technocratic mentality" which proposes that scientifically-trained experts are solely and uniquely qualified to make decisions about

wildlife and second, through external cultural pressures that influence governance processes in response to broader societal pressures for hierarchy and social order. Taken together, these chapters illustrate the complex and socially embedded nature of power in wildlife conservation and offer new insight into the potential for achieving governance reform in an era of social change.

ACKNOWLEDGMENTS

This dissertation is dedicated to the memory of Dr. Anthony Janetos, whose mentorship, insight, humor,

and humanity has left a significant impact on my life and an even more significant impact on our planet.

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CHAPTER 1 – INTRODUCTION

Wildlife conservation is in the midst of a critical historical moment. Social-ecological challenges associated with climate change, habitat fragmentation, and loss of ecosystem function threatens the integrity of biodiversity across the globe. Overconsumption of resources and rampant human development encroach on the few remaining wild places that exist on this planet, leaving the future of wildlife up for question. In such a deeply inter-tangled web of humans, animals, and ecosystems, the traditional framing of wildlife conservation as a technical problem to be solved by the "knowledgeable wise men of science" (Peterson, 1984) falls away, and the deeply social and political roots of these issues emerge. This, fundamentally, is the central premise of this dissertation: that wildlife conservation is a political process riddled with costs and benefits, winners and losers, and conflicting values surrounding the role of wild animals in our communities. Rather than a neutral and straightforward scientific process of observation and manipulation, wildlife conservation involves the allocation of scarce living resources and the sometimes-lethal determinations about what animals are allowed to occupy which spaces and to whose benefit. Who gets to make those decisions is critically important to shaping who gets to benefit from them.

Today, technocracy, or decision-making by scientifically trained experts, represents the dominant governance paradigm of wildlife conservation across the globe. As this dissertation will illustrate, technocracy is deeply intertwined with a broader Western culture of domination values and views of wildlife and wild spaces as capable of being manipulated and controlled for human benefit (Peterson, 1984). These cultures have been profoundly shaped by processes of modernization in the post-industrial world (Putnam, 1977; Inglehart, 2018). The institutionalization of governance by a scientific elite is one significant outcome of modernization, in which education became an important symbol of status and a primary mode of access to power in post-industrialized nations (Meynaud, 1968; Inglehart, 2018). However, modernization has also propelled a renewed democratic ethos, marked by increased political

activism and self-expression values that pose a significant challenge to the autocratic (or exclusionary) practices of technocratic governance. Simultaneously, increased urbanization distanced the public from direct encounters with wildlife and drove a significant shift in peoples' orientation toward these animals as a result (Manfredo et al., 2020). The domination values that had been so prominent in American society in the 19th and early 20th centuries began to give way to more mutualist values that reinforced the view of wildlife as companions, or extensions of one's social network, rather than resources for consumption (Teel & Manfredo, 2009). These changes have resulted in increased social conflict over the goals of wildlife conservation and increased pressure on conservation organizations to expand beyond their technocratic roots to address the deeply divisive values at the heart of contemporary conservation challenges.

Which forces of modernization – technocratic expertise or democratic engagement – will ultimately come to define conservation governance in the 21st century is yet to be determined. Understanding possible trajectories requires deeper understanding of the ways in which particular political models of decision-making in wildlife conservation emerge and are reinforced by historical, institutional, and cultural processes and how those processes differ across physical and social space. In the chapters that follow, I take a systems view of wildlife governance to shine light on the broader context within which these practices occur and lay the groundwork for understanding possible conservation futures. In chapter two, I outline the role of wildlife governance institutions in the United States, which are deeply embedded in a history of scientific management and prioritization of value-aligned stakeholders, to illustrate how understanding of governance characteristics such as adaptability and accountability are framed by the historic goals and objectives of wildlife management, and how these characterizations, in turn, influence the perceived need for change. In chapter three, I build further on the topic of scientific expertise to explore pervasive negative attitudes toward politics in wildlife agencies, fostered by a "technocratic mentality" that reinforces domination as the end goal of management and creates significant barriers to more inclusive governance by prioritizing expert opinion over public input. Finally, in chapter 4, I illustrate how technocracy evolved (and continues to evolve) in wildlife

conservation in response to cultural processes and values within society, often reflecting public preferences for structure and hierarchy that are built into our broader political culture.

Much of this dissertation focuses on wildlife conservation efforts in the United States and pays particular attention to the work of state wildlife agencies. Wildlife management in the United States operates within a federal system where state agencies maintain a high degree of autonomy over the governance practices of their states but remain bounded by federal law (e.g., the Administrative Procedure Act) to operate with a certain degree of transparency and public input (Sullivan, 2019). Moreover, while many differences exist among these state agencies, they are guided by a set of management institutions, collectively known as the North American Model of Wildlife Conservation, which outlines the use of biological science as the proper basis for decision-making and hunting as a primary tool for management (Organ et al., 2012). In many ways, the United States offers a unique opportunity to examine wildlife conservation efforts at both the macro and micro levels to understand how these organizations vary based on context as well as how they conform to specific shared visions and values across the landscape.

Data presented in this dissertation come from two primary sources associated with the "America's Wildlife Values" project completed in 2018 (see Manfredo et al., 2018 for more details). This project sought to determine, through a nationwide survey ($n = 43,949$), how public values toward wildlife are changing due to modernization and what the implications of such changes are for wildlife conservation in the United States. In conjunction with this project, we undertook a 30-state ($n = 10,669$) survey of wildlife agency employees to determine how agencies may be affected by the value compositions of their states and the degree to which agencies are undergoing similar social changes to those occurring in the public. Findings here represent both quantitative and qualitative analyses from these studies, and in some cases, stem from multilevel analysis procedures comparing agency culture characteristics to broader characteristics of the public across states.

Wildlife, in all of its forms, is critical to the health of our planet. But this is not a story about wildlife. Rather, this is a story about human progress, modernity, and the political choices that we make

as a society over who rules the earth and how. Much research in biology and ecology has been dedicated to advancing our understanding of wild species and their interactions; in many cases this research segments humans and political society into a different conceptual realm to be studied by different groups of scientists. However, as spoken by Donna Haraway (2016, p. 108) "what used to be called nature has erupted into ordinary human affairs, and vice versa, in such a way and with such permeance as to change fundamentally means and prospects for going on, including going on at all." The inseparable well-being of wildlife and people requires critical analyses of conservation as a socio-political process, and one which results in human and more-than-human winners and losers. Understanding the future of wildlife conservation in a time of rapid social and ecological change requires deep, interdisciplinary engagement with the complex systems that direct our social institutions and behaviors toward nature and its many inhabitants. This dissertation represents one of many such needed efforts toward this end.

CHAPTER 2 – SOCIAL CHANGE, STATIC GOVERNANCE: HOW HISTORY SHAPES

PERCEPTIONS OF GOVERNANCE IN WILDLIFE AGENCIES

1. INTRODUCTION

Natural resource agencies in the United States have long sought to balance their competing goals for conserving resources while also providing for the needs and desires of the public (Pritchard & Sanderson, 2002). To meet these duel demands, agencies have historically relied on expert decision-making models that orient toward the interests of value-aligned clientele that they see as key in carrying forward their mission. But as public values that underlie conservation diversify, how do agencies adjust their practices to a new social context? In recent years ecological uncertainty borne of climate change, habitat fragmentation, and rapid species decline has collided with a modernizing social landscape that has reshaped the nature of natural resource management and the demands of the public in the policy process (Chanley et al., 2000; Holling et al., 2002; Vigoda, 2002; Inglehart, 2018). As a result, many scholars and practitioners in the natural resource fields question whether governance models designed to meet the needs of a previous era are capable of addressing new social challenges that accompany management amid diverse and often conflicting values (Decker et al., 2016; Serfass et al., 2018). This has led many to call for more inclusive forms of decision-making such as adaptive management, collaborative conservation, and deliberative democracy, and resulted in what has been called a *participatory turn* in natural resource management (Dryzek, 2013).

Such calls for reform have appeared to resonate within the field of wildlife management, as agencies face increasingly polarized and vocal publics who view management issues through competing value frames (Teel & Manfredo, 2009; Manfredo et al., 2020). State wildlife agencies have traditionally relied on biology and partnerships with hunting and angling stakeholders to direct wildlife policy within their states. While public listening sessions occur as mandated by law under the Administrative Procedure Act, they are rarely important policy considerations (Sullivan, 2019). Emerging social conflict over the proper management of wildlife in recent decades has resulted in pressure within the field for more

participatory decision-making to "help lead to institutional cultural changes that will result in improved delivery of public trust and good governance expectations as well as improved wildlife conservation" (Decker et al., 2016, p. 291). While ambitious goals for governance reform may offer hope for addressing the ballooning challenges of conservation, little research to date has empirically examined the potential for such reform within the broader cultural context of wildlife decision-making. Theories from organizational change and social-ecological systems science illustrate how public organizations are bounded by historical events and multilevel pressures for stability, indicating that transformative change may be more easily said than done (Gunderson & Holling, 2002; Sydow et al., 2009; Manfredo et al., 2017a). To understand whether the recent calls for reform will be impactful requires first gaining insight into the current state of wildlife governance in the U.S. and the ways in which management organizations are bound up in complex social systems. This manuscript is intended to contribute to this area by exploring how past governance paradigms become locked into practice, and how those paradigms, which often favor certain perspectives and objectives over others, shape employees' interpretations of their agencies' governance characteristics and whether change is necessary. In the following sections, we begin by considering why calls for participatory governance reform have been largely unimpactful as social values have shifted and conclude by outlining possible pathways to reform.

1.1. Paradigms of Governance Reform and Changing Social Values

State wildlife agencies in the United States face unique governance challenges due to their often-contradictory mandates for conservation and use of resources. This dual mandate has shaped not only the landscape of resource *management* – the operational process of decision-making to specific ends – but also the unique *governance* processes through which agencies negotiate and bargain with private citizens, businesses, and civil society groups to shape policy (Armitage et al., 2012; Lange et al., 2013). Competing goals for wildlife management are clearly visible in guiding narratives such as the North American Model of Wildlife Conservation, which outlines both resource protection and hunting opportunity as primary goals of management, and proposes the use of science as the proper means for setting policy to achieve these ends (Organ et al., 2012). The formal and informal rules, norms,

partnerships, and laws that make up wildlife management, including the North American Model, are

known collectively as *institutions* and are key to understanding how decision-making processes emerge

and are sustained over time (Ostrom, 2009). Rather than being specific to wildlife, these institutions are

often "embedded within, or intersecting with, broader governance processes" at the societal level

(Armitage et al., 2012, p. 245) that come to be known as *paradigms* or overarching frameworks for

governance (Stoker, 2006). Natural resource governance paradigms are many-fold and compounding in

nature as they go through continuous processes of reformation. In his book *The Tides of Reform*, Paul

Light highlights that "unlike the tides of the ocean, which simultaneously erode and reshape the shore, the

tides of reform mostly add administrative sediment…" (1997, p. 3).

Three governance paradigms, each layering on top of the last, characterize processes of reform in

wildlife management in the U.S. to date. First, beginning at their foundation at the turn of the 20th century,

decision-making in wildlife management was largely driven by a *technocratic* approach, where

government bureaucrats trained in the natural sciences (and biology in particular) worked to address

bounded, technical environmental challenges. In this paradigm, practitioners approached natural resource

challenges through "command-and-control" processes designed to address issues of resource scarcity or

environmental threat (Holling & Meffe, 1996). Administrative agencies, operating under the auspice of an

"apolitical" administration, were designed to operate outside of the political processes that drove state

policymaking (e.g., campaigns and elections) and were charged instead with making decisions based on

technical training and expertise (Putnam, 1977). Created at the height of this governance paradigm,

wildlife agencies have widely embraced such expert-driven decision-making approaches as a best-

practice in conservation (Manfredo et al., 2017b).

While scientific management is still largely held as the standard of decision-making in natural

resource management, mid-century changes to state and federal laws requiring agencies to open their

decision-making processes to public comment prompted reform towards a new paradigm known as

clientelism. This added a new layer of administrative sediment to technical scientific approaches by

prioritizing management efficiency and customer service, directing scientific efforts towards objectives in

line with the interests of key stakeholders (e.g., hunters and anglers in wildlife management; timber industries in forestry management; Bevir et al., 2003; O'Flynn, 2007; Park & Joaquin, 2012). In wildlife management, clientelism came to reinforce an "iron triangle", where legislators, agency experts, and sportsmen worked in tandem to define management goals and policies, often at the exclusion of non-traditional stakeholders and members of the broader public (Gill, 1996). As clientelism models took hold, the iron triangle became not just a symbol of political privilege but one of mutual interdependence as sportsmen relied on decision-makers to pass favorable policies while agencies became dependent on sportsmen and state legislatures for continued financial support (Serfass et al., 2018).

These existing paradigms overtime have merged into a powerful guiding force for U.S. wildlife management that centralizes scientific expertise and relationships with key stakeholders such as hunters and anglers. In recent years, however, this model has been criticized for excluding members of the broader public with a vested interest in wildlife conservation (Park & Joaquin, 2012). As society changes, this poses a significant challenge to the continued legitimacy of wildlife agencies. Beginning in the mid-20th century, modernization driven by increased wealth, education, and urbanization began to produce a shift in social values that has since propelled more people into political decision-making (Inglehart, 2018). The emergence of new voices spurred *participatory* reform focused on building legitimacy among a distrusting public by engaging them more directly in decision-making processes (O'Flynn, 2007). As this new paradigm continues to take shape, public agencies are regularly being encouraged to be more accountable to the public, more adaptive in the face of change, and more transparent in their operations (Lockwood, 2010; Decker et al., 2016).

For wildlife agencies, this change has had a two-pronged impact. Modernization has resulted in more vocal publics who want a significant say in decision-making processes as well as ushering in a distinctive shift in how people relate to wildlife. While many Americans have historically held a domination value orientation towards wildlife that views animals as resources to be used for human benefit, modernization is associated with a rise in mutualist orientations, where individuals feel a strong social connection to wildlife and view animals as an extension of their social networks, deserving of

rights and legal protections (Teel & Manfredo, 2009). As values have shifted, declines in hunting have led

to significant budgetary shortfalls for state agencies who rely on license sales to fund their operation

(USFWS, 2016), resulting in a perceived need among many in the upper ranks of these agencies to adapt

to change if they are to remain viable in the future (see for example, AFWA & The Wildlife Management

Institute, 2019). The proposed need for reform is not just rooted in economics, however. Scholars and

practitioners also note how increased social conflict over the goals of management is drawing debates

over wildlife into new arenas like courtrooms and ballot boxes where members of the public can direct

policy without input from wildlife agencies (Nie, 2004a; Manfredo et al., 2017b). While calls for reform

have reverberated throughout U.S. wildlife conservation for decades now (Beck, 1998; Nie, 2004a;

Decker et al., 2016), the path toward achieving such a transformation has yet to be determined. In an

increasingly complex social environment, how may we expect future governance paradigms to emerge

and be influenced by those of the past? The section that follows outlines current theoretical perspectives

on how change occurs in complex social systems and applies these perspectives to wildlife governance in

the United States.

1.2 Organizational Change in Complex Social Systems

Increased focus on governance reform across the public sector has resulted in a resounding

growth in research on how change occurs within public organizations. In recent decades, new theories

have emerged that paint a picture of organizational change as uncommon, unintentional, and largely

convergent around existing institutions, values, and management practices (Greenwood & Hinings, 1996;

Cohen, 2013). These theories highlight that the potential for transformation in any organization must be

couched within an understanding of "self-reinforcing mechanisms on the one hand and enabling

institutional contexts on the other" (Sydow et al., 2009, p. 701).

What, then, are the self-reinforcing mechanisms and institutional contexts that drive current

wildlife governance practices? First, emerging research considers social systems to be multilevel and

argues that organizations such as public agencies are continually being shaped by stabilizing pressures

from above and perturbations from below (Figure 2.1; Gunderson & Holling, 2002). Deeply held
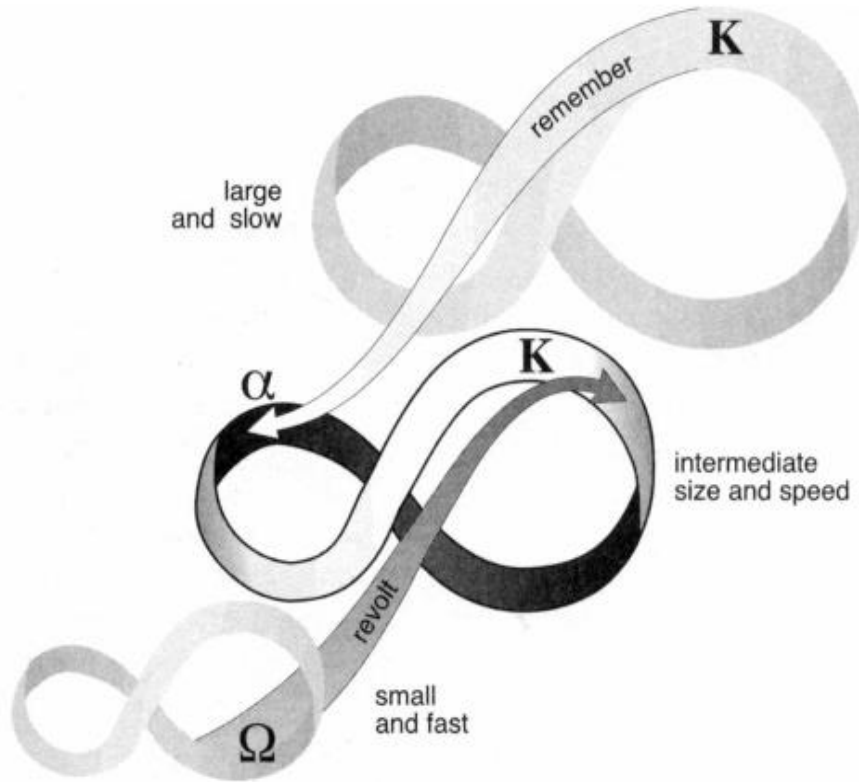
Figure 2.1: Multilevel drivers of change and stability, from Gunderson and Holling (2002).

domination values and philosophies about the appropriate role of science and politics in decision-making flow down from the institutional level – from widely held rules, norms, and values that shape management processes – to influence culture and practices within the organization (indicated by the "remember" pathways in Figure 2.1). These values and philosophies are not just cognitive but are embedded into every aspect of our social and physical surroundings, from the foundations of educational systems to the images and symbols used in media and mythology, making intentional transformative change difficult to achieve (Manfredo et al., 2017a). Over time, powerful institutions come to define the identity of organizations and are self-reinforcing as they begin to attract individuals who share the same values and establish normative standards for appropriate beliefs and behaviors of those within the organization (Manfredo et al., 2017a). In fact, institutional influences on organizational culture are so strong that members of organizations often act not with autonomy, but as actors bound by specific

institutional constraints (March & Olsen, 1983; Sydow et al., 2009). For example, Cramer et al. (1993) found that U.S. Forest Service employees acted based on the values and norms of the organization, even when such behaviors went against their own individual perceptions of what was right.

Stabilizing institutions that reinforce values and norms can create organizations that exhibit "remarkable persistence" (Gunderson & Holling, 2002, p. 61) in changing environments, leading to tension between the actions of the organization and the broader social contexts within which they exist. In periods of dramatic social, political, or ecological change, such misalignment can lead to what Gunderson and Holling (2002) refer to as the "release" stage of the adaptive cycle (Ω in Figure 2.1). In this stage, organizational structures become so fundamentally misaligned with their social context that they breakdown, creating an episodic opportunity for change. Change then trickles up from the lower levels of the social system as individuals bring new ideas, perspectives, and innovations into the organization (indicated by the "revolt" path in Figure 2.1; Geels; 2002). According to Holling, Gunderson, and Ludwig (2002, p. 20), "adaptive systems can, for brief moments, generate novel recombinations… These windows of experimentation open briefly, but the results do not trigger cascading instabilities of the whole because of the stabilizing nature of nested hierarchies." In short, the stabilizing forces of institutions create a shared identity that serves as a boundary to ensure that innovations do not fundamentally alter the core of organizations during periods of perturbation. Predicting where organizations are in this adaptive cycle at any one moment in time is challenging given the dynamic nature of the system. However, some in the wildlife management field view release as imminent because of the growing misalignment between agency culture (which is highly domination-oriented) and public values (which are increasingly mutualist). This has been a leading driver in the call for participatory reform in wildlife governance scholarship (e.g., Decker et al., 2016).

If multilevel forces act as vertical modes of reinforcing organizational behavior, *path dependence*, or the process through which choices made in the past shape available policy options in the future (Sydow et al. 2009; Olsson et al., 2010), acts as a horizontal linkage between past and present. Path dependence theory articulates that overtime, the decisions organizations make alter the social and physical landscape

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in such a way as to narrow the frame of possible innovations in the future. In wildlife management, the use of command-and-control practices can likewise be viewed as narrowly framing current conservation efforts as it has physically transformed the landscape to contain high ungulate populations and low predator populations (Holling & Meffe, 1996). The paths that organizations take are the direct result of the unique institutional context that existed at an organization's founding, with the range of future management options available narrowing based on the decisions made the past. Figure 2.2 illustrates the narrowing path of available policy options for wildlife agencies, depicting early reliance on command and

The Constitution of an Organizational Path

Phase I Phase II Phase III

Expert Decision-Making

North American Model

Scope/range of variety (managerial discretion)

Command and Control

Pittman-Robertson Act

Critical juncture Lock-in t

✳ Options
--- Emerging path
▨ Range of available options
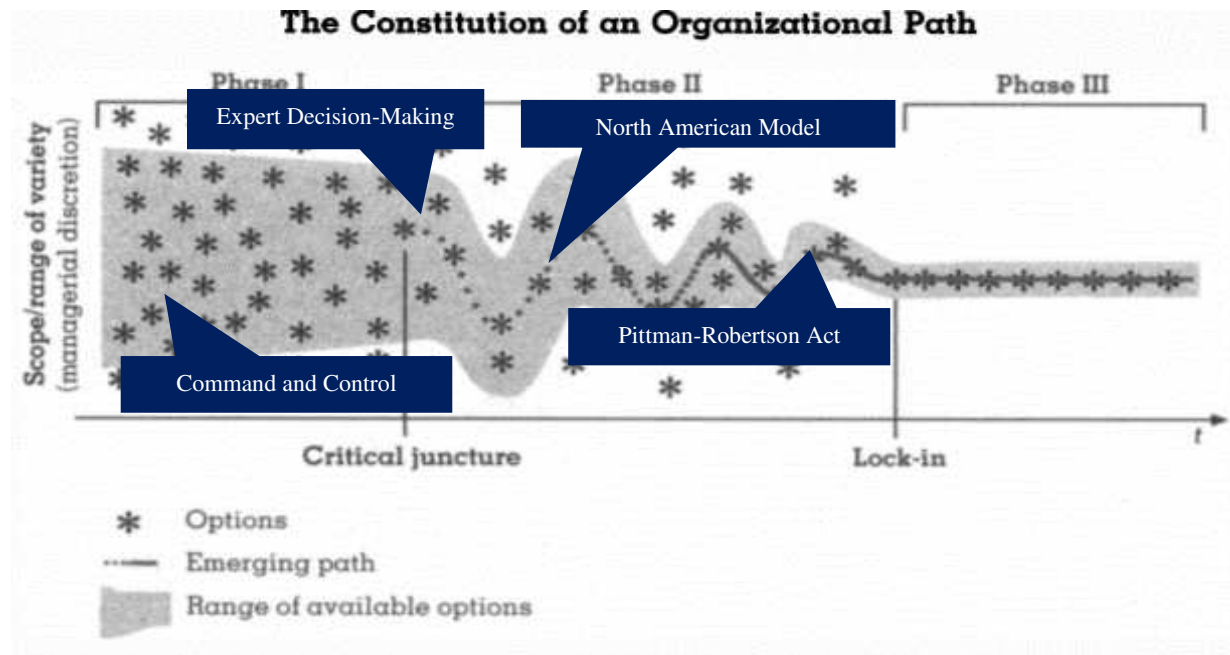
Figure 2.2: Illustration of path dependence adapted from Sydow et al. (2009) to the wildlife management context

control practices which led to the framing of wildlife challenges as technical and increased the need for technical expertise to solve these problems. The North American Model, which guides conservation efforts in the U.S., institutionalized these approaches and locked domination values into wildlife management practice. Once institutionalized, these values went on to shape the design of funding mechanism through the Pittman-Robertson Act (1937), which links wildlife agency funding to hunting

and angling license fees, and serve to solidify existing clientele as agency-defined stakeholders, orient management toward sustaining populations of game species rather than creating space for public debate about conservation goals, and narrow the possible future trajectories of participatory reform efforts. While options at the beginning of agencies development were manifold, today agencies are limited in the range of approaches they can take based on the path dependent institutions forged over time. Understanding how multilevel, path dependent forces shape current beliefs around who should participate in wildlife governance is key to determining the possible trajectory of participatory change.

1.3 Research Questions

The purpose of this study was to determine the current culture of state wildlife agencies, and moreover, to explore how historical management paradigms and institutional pressures may shape the potential and directionality of future reform. Analyses were guided by the following research questions: (1) *Are stabilizing institutional forces reinforcing the traditional values of wildlife agencies?* If institutional pressures for stability are indeed driving agency culture, we could expect to find that traditional domination values still prevail in these organizations despite the societal-level shift toward mutualism (Manfredo et al., 2020). We tested this hypothesis first by comparing the wildlife values of the public with those of agency employees, aggregated across 29 states. We then conducted this comparison at the state level to determine whether domination values were still pervasive in the more mutualist states. Understanding the current context of wildlife agency values is key to framing further discussions around participatory reform. While much discussion has revolved around the need for agencies to better represent the public they serve, the continued pervasiveness of domination values in agencies may be a barrier to achieving these goals. If, as hypothesized, values are remaining stable in wildlife agencies, then we may deduce that institutional forces for organizational stability are indeed present and could shape the potential for achieving change.

(2) *Does history frame how wildlife agencies define their current governance characteristics*? In path dependent organizations, theory proposes that decisions made in the past narrow options available in the future. We believe path dependence may also have a similar cognitive effect, where past paradigms shape

how practitioners view their agency's characteristics and in turn perceive the need for governance reform. As an illustration, we propose that whether employees characterize their agencies as *adaptable to change* and *accountable to the public* will depend on the degree to which they perceive their agency as meeting historic standards associated with scientific management and responsiveness to traditional stakeholders like hunters. We then explored whether these characterizations were related to lower levels of support for increasing public participation.

(3) *Is there evidence of support for a participatory turn in wildlife agencies?* If, as we hypothesize, stabilizing institutions and path dependent pressures are acting on agencies to maintain current governance models, then we would expect to find little support for a participatory turn across wildlife agencies. We tested this hypothesis by comparing agency employee perceptions of current and ideal levels of public participation in decision-making. If employees, in the aggregate, indicate a significantly stronger preference for participatory governance looking forward than they perceive currently, we propose that support for undertaking reform efforts across wildlife management may exist.

2. METHODS

2.1 Data Collection

Data for this study were gathered through an online Qualtrics (Provo, Utah) survey of U.S. state wildlife agency employees in 2018. The survey was designed to capture characteristics of state agencies (e.g., levels of public participation, agency characteristics) and individual agency employees (e.g., wildlife values). The opportunity to participate in this study was offered to all 50 state agency directors verbally and in writing; ultimately, data from 29 agencies were included in these analyses for a total of 10,204 individuals (69% response rate). Public comparison data were collected via a mail survey in 2017 and 2018, resulting in a total of 23,701 responses (for more detailed information on the public survey, see Manfredo et al. [2018]). Survey instruments and administration procedures were approved by Colorado State University's Institutional Review Board (Protocol 02-147H).

2.2 Measurement and Analysis

For our first research question, we measured wildlife values among members of the public and state agency employees through a previously validated 19-item scale assessing responses on two value dimensions (Teel & Manfredo, 2009). A *domination* value orientation was captured through items assessing beliefs about hunting and wildlife use, while a *mutualism* value orientation was captured through items assessing beliefs about caring and social affiliation. Respondents rated their level of agreement with belief items on a scale from 1 (strongly disagree) to 7 (strongly agree). SPSS v. 25 (Chicago, Illinois) was used to compute value orientation scores. First, we assigned respondents a score for each belief dimension (e.g., wildlife use) computed as the mean of all items within that dimension. We then assigned a value orientation (e.g., domination) score by computing the mean of corresponding belief dimension scores following the procedures used in Teel and Manfredo (2009). We segmented respondents into one of four value types by comparing their scores on domination and mutualism simultaneously. High scores were defined as > 4.50, whereas low was defined by scores of ≤ 4.50[1]. Traditionalists scored high on domination, low on mutualism; Mutualists scored high on mutualism, low on domination; Pluralists scored high on both scales; and Distanced scored low on both (Teel & Manfredo, 2009). Percentages of each value type within the 29 agencies were then compared to public percentages of the same across those states using a chi-squared analysis. Additionally, we aggregated our findings to the state level to examine the relationship (Pearson's *r*) between the percent of Mutualists in the public and the percent of employees with strong mutualism values (including both Mutualists and Pluralists)[2].

For our second question, we measured characterizations of adaptability and accountability by asking respondents to indicate on a scale from 1 (very uncharacteristic) to 5 (very characteristic) whether

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[1] Consistent with prior wildlife values studies, this breakpoint represents the midpoint of each scale, computed as the mean of individual survey item scores for domination and mutualism. This breakpoint provides face validity for our measures, as it results in responses being classified as "disagree" or "agree" depending where they fall and has been shown to have predictive validity in explaining attitudes and behaviors in prior studies (see, for example, Manfredo et al., 2020).

[2] The use of an expanded definition of mutualism within agencies is necessary to account for the low percentage or non-existence of Mutualists in many agencies in our sample and represent a more nuanced approach to understanding change within organizations where new values layer on old ones rather than replacing them (Light, 1998).

a set of traits (e.g., adaptable in the face of change, open and transparent) characterized their agency. For our purposes, adaptability refers to an organization's capacity to respond to changing or unforeseen conditions, while accountability refers to whether an organization is responsive to the public (Lockwood, 2010). We averaged responses of the corresponding items to create scales for both variables, which were then tested for reliability (Cronbach's alpha; SPSS v. 25) and model fit (Confirmatory Factor Analysis; LISREL v. 9 [Chicago, Illinois]) (Table 2.1). Responses were then aggregated to represent agency-level

Table 2.1: Survey items and factor loadings for adaptability and accountability indices

Concepts and Items [a]	Factor Loadings [b]	Cronbach's Alpha
Adaptability		**.903**
Adaptable in the face of change	*.83*	
Innovative in its approach to management	*.79*	
Willing to take risks	*.72*	
Forward-looking	*.85*	
Takes advantage of new opportunities	*.77*	
Accountability		**.925**
Accountable for its actions	*.80*	
Transparent and open	*.80*	
Tolerant of different viewpoints	*.82*	
Equitable in its approach to management	*.84*	
Focused on fair process	*.83*	
Stands for integrity	*.76*	

[a] Question text (measured on 1-5 scale): *Below is a list of phrases that may or may not describe your agency. We want to know how well you think each of these phrases characterizes your agency. Please indicate the extent to which you believe each phrase is uncharacteristic or characteristic of your agency by selecting one response for each.*
[b] Standardized factor loadings from Confirmatory Factor Analysis (CFA). All loadings significant at p < .05.

characteristics as the percentage of employees who rated their agency above the scale mid-point (2.5) for each concept, following methodologies outlined by Kowalski and Klein (2000) for analysis of multilevel data. Our independent variables included metrics associated with existing technocratic and clientelism paradigms such as adherence to expert decision-making; perceptions of public and clientele inclusion in decision-making; and wildlife values (specifically, levels of mutualism) in agencies and the public. Expert decision-making was measured through a set of dichotomous items about management priorities,

including the prioritization of science over politics, resources over people, and habitat protection over recreational opportunities. We combined items in a scale by averaging responses (Cronbach's $\alpha = 0.67$), which were then aggregated to represent the percent of employees within an agency who scored above the scale mid-point (1.5). Mutualism in this instance was measured as the percent of people holding mutualism values (including Mutualists and Pluralists[3]) within a state. Finally, perceptions of public and clientele inclusion in decision-making were measured as the percent of agency employees who indicated that a) members of the public and b) paying stakeholders (hunters and anglers) are currently included in decision-making at an adequate level. This variable, which adapted Arnstein's (1969) ladder of participation to wildlife management, asked respondents to indicate at what level each of the above groups were included in decision-making processes[4]. We then calculated perceptions of adequate involvement by subtracting respondents' scores for current participation from their scores for ideal participation. Those scoring zero or below were classified as viewing current practices as adequate, and percentages were aggregated to represent views at the agency level. Once all variables were computed, we ran a series of bivariate correlations (Pearson's *r*) to examine associations between our independent and dependent state- and agency-level variables. We then ran multiple linear regressions to determine which factors were most influential in predicting characterizations of adaptability and accountability at the agency level.

For our final research question, we explored whether support for a participatory turn could be found by comparing employee perceptions about current and ideal levels of public inclusion in decision-making using Arnstein's (1969) adapted scale indicated above. For this analysis, we grouped responses based on Arnstein's prior classifications, with low responses (non-participation and public education) representing non-participation, mid-level responses (consultation and representation) representing token participation (i.e., members of the public may be present but are not influential), and high responses

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[3] The expanded use of mutualism for both of these variables accounts for low percentages of Mutualists in agencies and maintains consistency across items in our regression.

[4] The scale for this item was as follows: 1 – non-participation; 2 – education; 3 – consultation; 4 – representation; 5 – partnership; 6 – delegation; 7 – complete control; full survey available in Appendix A.

(partnership, delegation, and complete control) representing participatory forms of governance. We then ran a chi-square test comparing current and ideal levels of support for these three categories aggregated across all respondents to determine if a significant difference could be detected.

3. FINDINGS

3.1 Comparison of Wildlife Values in Agencies and the Public

Our findings showed substantive differences in wildlife values when comparing agencies to the public (χ^2 [3] = 68.03, p < .001; Cramer's V = .88). Mutualists accounted for 33% of the public across our 29 states but only 7% of agency personnel, while Traditionalists accounted for around 30% of the public and 65% of agency employees (Figure 2.3). The centrality of domination values is further reinforced in our findings at the state level. In more Mutualist states, agency employees were slightly more likely to be
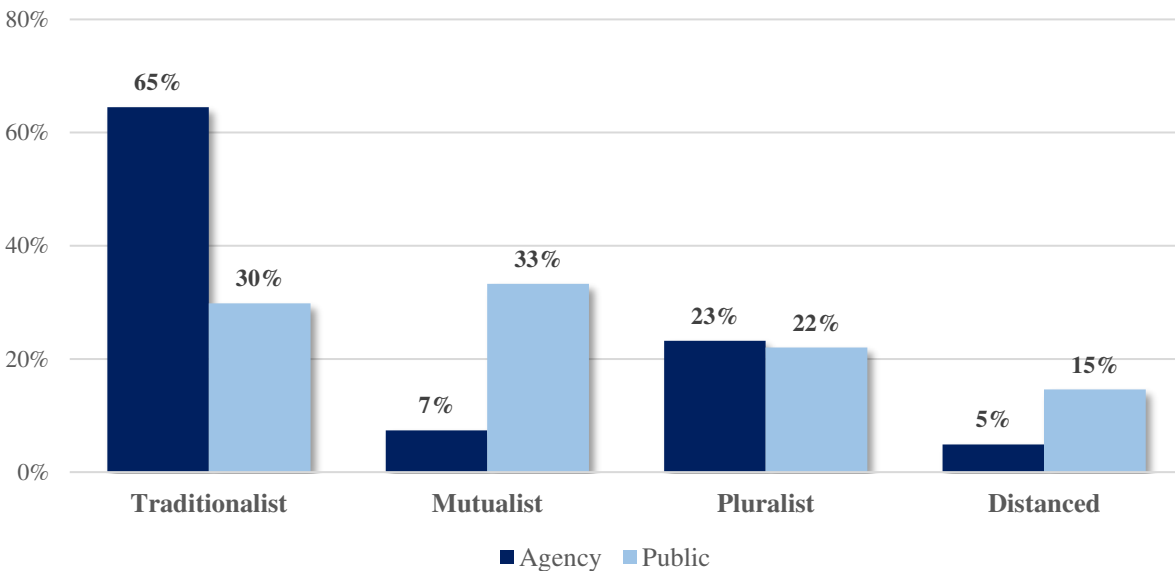
Figure 2.3: Comparison of wildlife values, public and agency

classified as Pluralists, holding both mutualism and domination values simultaneously (r = .398; Figure 2.4). Even as new values come into wildlife agencies through bottom-up perturbations, our findings suggest they may layer on top of old ones as proposed by Light (1997). These findings illustrate the
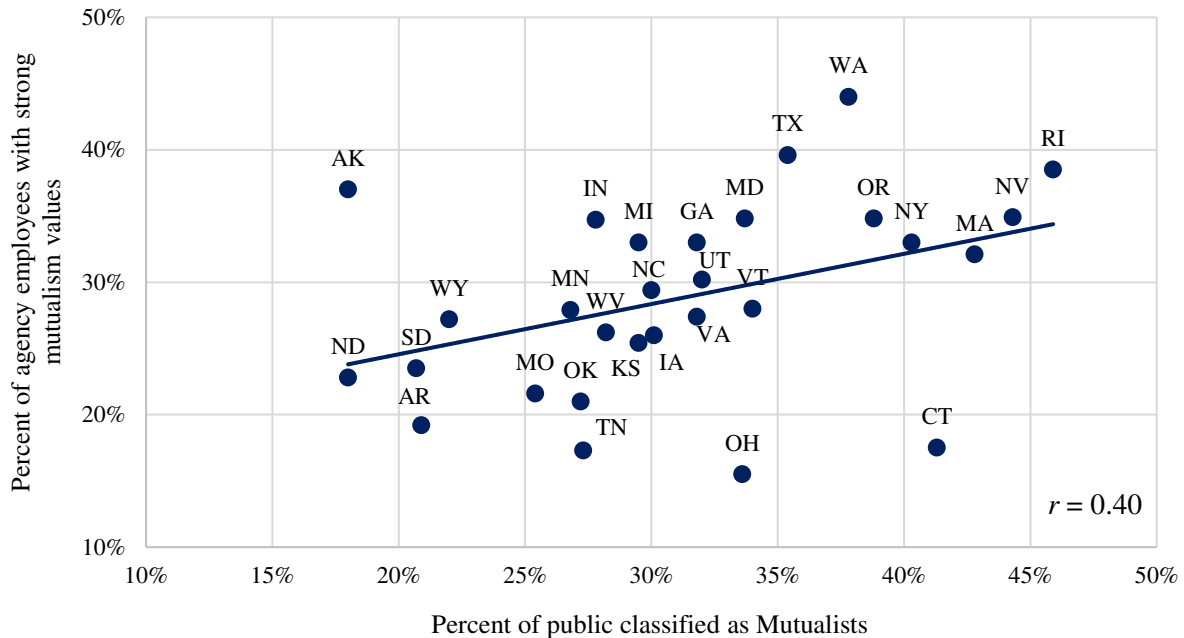
Figure 2.4: Percent Mutualist in each state by percent of agency employees with mutualism values

resilience of domination values in wildlife agencies and become an important baseline from which to consider the need for and potential to enact meaningful transformative change.

3.2 Characterizations of Agency Adaptability and Accountability

In response to our second research question, we found that employee characterizations of adaptability and accountability are indeed influenced by the expert and clientele character of their agencies. First, our correlation analysis revealed moderate to large associations between our predictor variables and adaptability and accountability at the agency level (Table 2.2). However, when taking all predictors into account simultaneously, regression analyses indicated that the only significant predictor of adaptability was the percent of employees who perceived clientele (hunters and anglers) to be adequately included in decision-making ($\beta = .52$, $p = .09$); this model explained more than 50% of the variance in adaptability scores ($r^2 = .548$). A descriptive illustration of this relationship is provided in Figure 2.5(a), which shows that in agencies where a higher percentage of employees perceive clientele to be adequately included in decision-making, more characterize their agency as adaptable. For accountability, our model

Table 2.2: Bivariate correlations and multiple linear regression results, adaptability and accountability

Concept	Adaptability				Accountability			
	Pearson's *r*	Std. Beta	Sig.	R^2	Pearson's *r*	Std. Beta	Sig.	R^2
				.548				**.806**
Expert decision-making	.376	.238	.138		.547	**.319**	**.004**	
Mutualism in the public	-.355	-.172	.195		-.173	-.002	.343	
Mutualism in the agency	.032	-.230	.265		.259	-.109	.985	
Public adequately included	.468	.215	.181		.571	**.279**	**.012**	
Clientele adequately included	.601	**.515**	**.009**		.785	**.637**	**<.001**	

explained over 80% of the variance (r^2 = .806) in scoring with three significant predictors: perceived use of expert decision-making (β = .319, p = .004) and percent of employees who believe that the public (β = .279, p = .012) and clientele (β = .637, p < .001) are adequately included in decision-making. In this model, as in the first, the percent of employees who perceived clientele to be adequately involved in decision-making way, by far, the strongest predictor of accountability. A descriptive illustration is available in Figure 2.5(b) and (c) to show directionality and strength of these relationships. Finally, as anticipated, we found a strong negative relationship between the perceived need for greater public participation in decision-making at the agency-level and percent of employees who characterize their agency as adaptable (r = -.468, p = .01) and accountable (r = -.571, p = .001; Figure 2.5(d)). Findings illustrate how characterizations of agencies are shaped by standards associated with prevailing paradigms of technocracy and clientelism, which in turn influence perceptions of the need for change.

3.3 Current and Ideal Levels of Public Inclusion in Agency Decision-Making

Finally, our findings illustrate that employees currently perceive their agencies to primarily include the public in decision-making through processes of consultation and representation (65%), which represent token forms of participation that bring individuals into decision-making but give them little

(a) Characterizations of adaptability by perceptions that clientele are adequately involved in decision-making
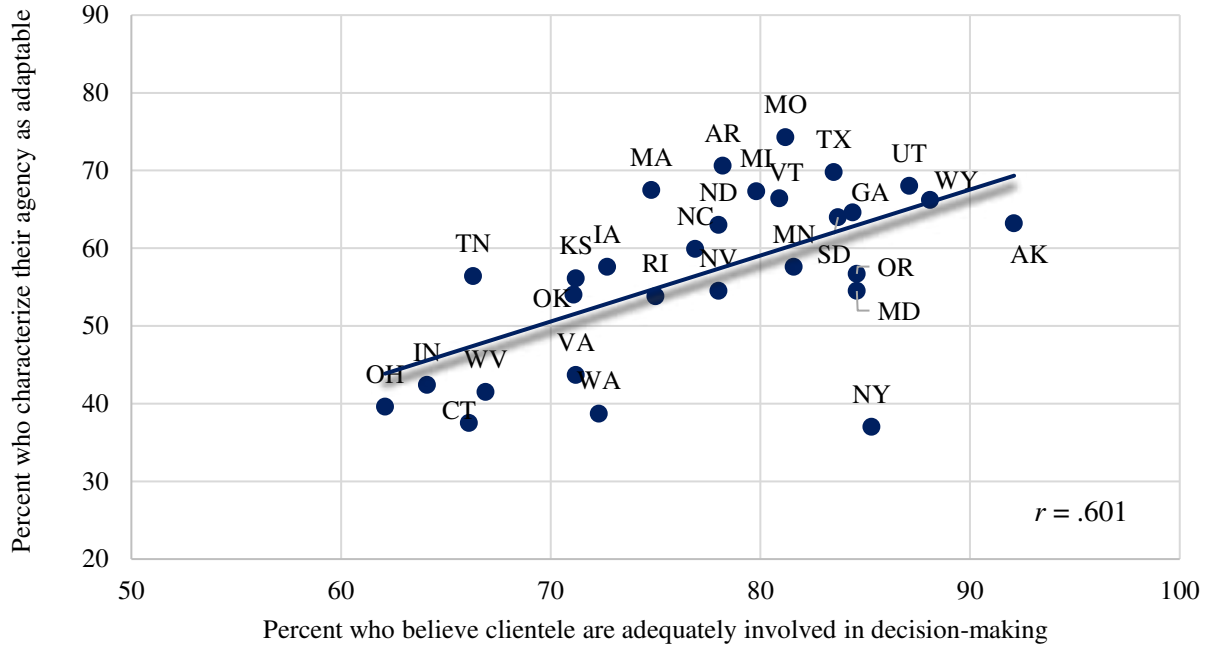
(b) Characterizations of accountability by perceptions that agencies use expert decision-making
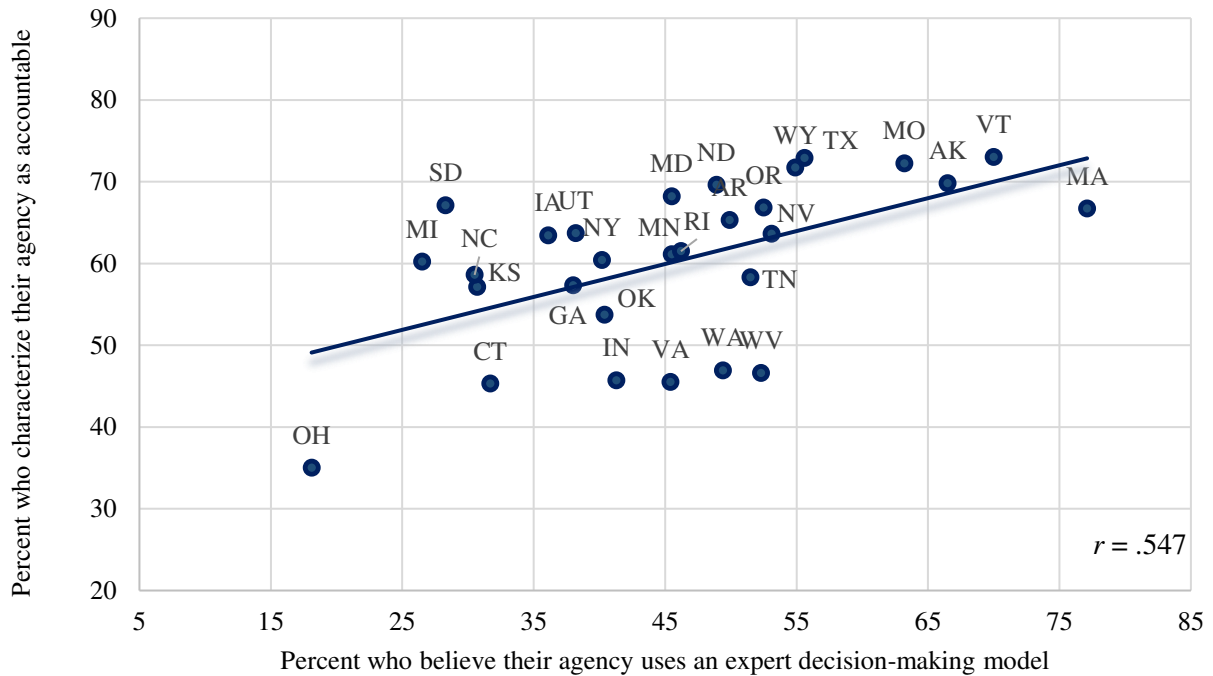
(c) Characterizations of accountability by perceptions that clientele and the public are adequately included in decision-making
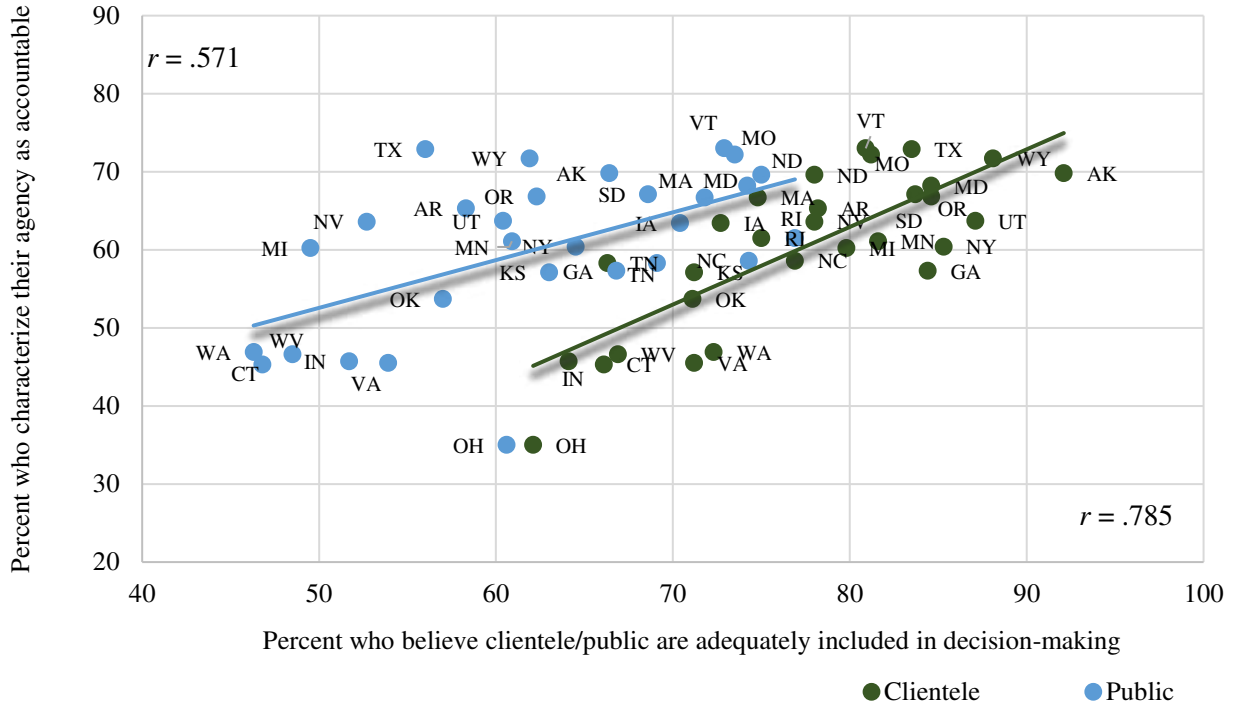
(d) Characterizations of adaptability and accountability by belief that public should be more included in decision-making
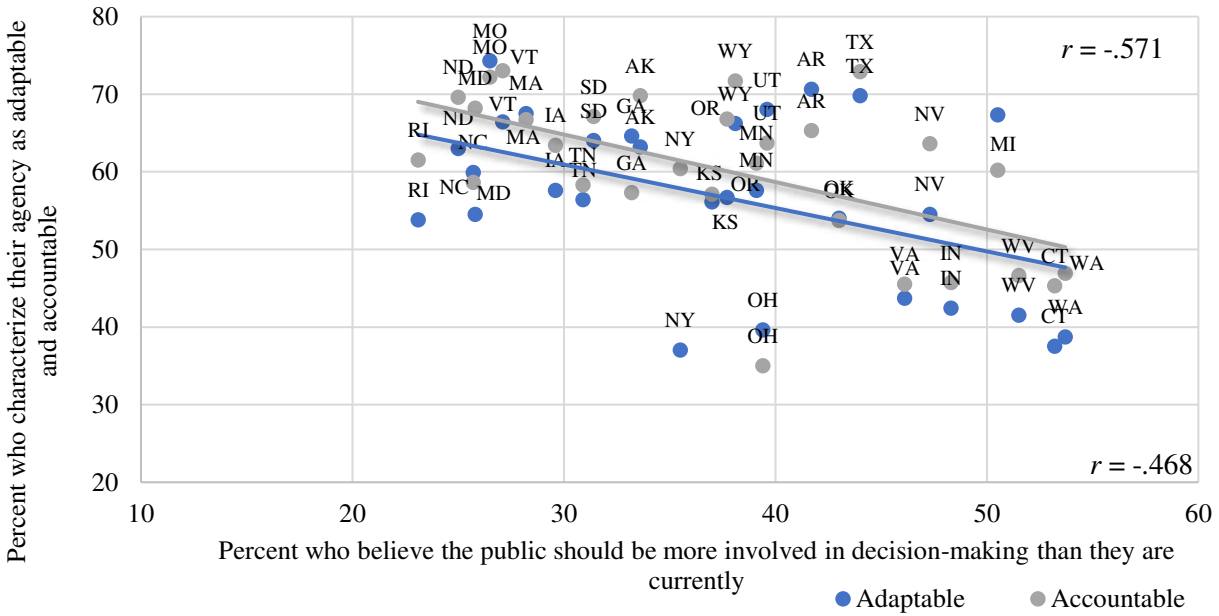
Figure 2.5: Descriptive illustration of relationships between expertise, clientelism, accountability, and adaptability

influence over the process (Arnstein, 1969). Further, our findings indicated that employees view tokenism as the ideal level of public inclusion (66%). Importantly, no statistically significant difference exists between employees' perceptions of current and ideal levels of public inclusion in the aggregate (χ^2 [2] = 5.23, p > .05; Figure 2.6), which we interpret to mean that little support exists among employees broadly for undertaking transformative efforts to bring members of the public more directly into wildlife decision-making.
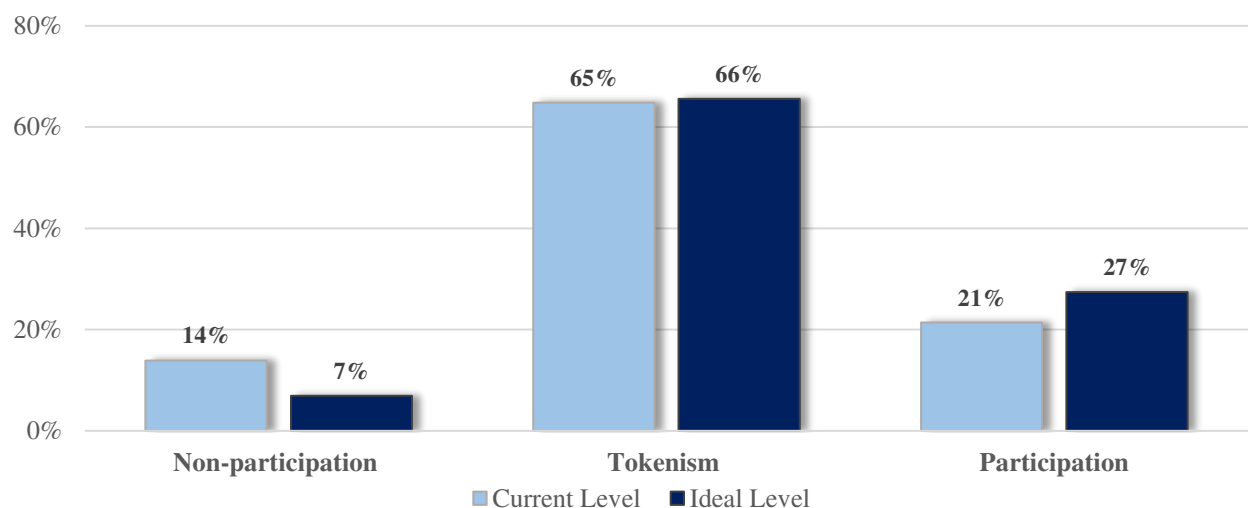
Figure 2.6: Current and ideal levels of public inclusion, as indicated by agency employees

4. DISCUSSION: TOWARDS A PARTICIPATORY TURN IN WILDLIFE MANAGEMENT?

Across natural resource management fields, calls for a participatory turn have altered existing narratives about the best path forward for conservation. Brought about by shifting social values that have placed renewed focus on democracy, transparency, and inclusivity, these calls have put pressure on public agencies to rethink how they engage different segments of the public in conservation decision-making. But what might the path toward a participatory turn look like in wildlife governance? Our findings illustrate that future governance paradigms will be informed by those of the past. Specifically, our findings show the resilience of traditional values in state wildlife agencies despite societal change, although, we do see signs of mutualism beginning to emerge and layer onto existing value structures in

agencies through those with pluralistic (i.e., mixed domination and mutualism) values. The misalignment of values between the public and agencies is of critical importance. As public values towards wildlife change, agencies face both operational and legal challenges to their continued efforts. Finding ways to bring segments of the public with non-traditional values more directly into the decision-making process may help address these differences and maintain the relevancy of the agencies in a value-diverse social context. Such efforts may be complicated, however, by a lack of support within agencies for participatory reform, which appears to be influenced by path dependent forces. First, our findings illustrate that how employees characterize their governance processes (for example as adaptable to change or accountable to the public) is based largely off of the standards associated with past paradigms such as hunter involvement and technical expertise rather than forward-looking standards associated with broader public involvement. Moreover, we found that these characterizations were strong predictors of opposition to increasing public participation, suggesting that existing institutions serve as a cognitive reinforcement of the status quo and may dampen base-level support for participatory reform.

The constraining nature of these systems does not mean change will not occur. Rather, theory proposes that we may expect change in the short-term to converge with the historical paradigms laid out above. For example, agencies may expand participatory opportunities by directing new services to non-traditional audiences (e.g., providing more access to wildlife viewing opportunities or public educational programs) or may create even more space for existing clientele to engage in decision-making processes. While these efforts mark a type of participatory turn, they fail to address the complex value-based differences at the root of social conflict over wildlife issues. If agencies wish to remain relevant in a changing social landscape, they will need to do more than offer new opportunities for recreation; they will need to bring members of the public into the decision-making process to address the fundamental governance challenges of conflicting values and procedural equity. Such reform will undoubtedly require changes to participatory practices, which to date have often been limited to public comment periods and listening sessions mandated by state and federal laws. These forums for citizen participation have been

criticized for enhancing the conflictual nature of value-laden questions by soliciting public opinion that has no room for compromise. Nie (2003a, p. 327) illustrates these problematic arrangements, arguing that

> *'Public hearings' are often a misnomer because little hearing is actually done. Instead, the process encourages more conflict, divisiveness, grandstanding, and broad one-sided policy statements… Participants often see this process as a way to make policy demands, and they expect their adversaries to do the same, all while seeing the agency as the final arbiter of competing claims. The incentive is not to accommodate opposing views, but to provide input that is unequivocally for or against something. After all, if the decision maker is going to consider, and perhaps even weigh public input, better make that input as zero-tolerance as possible."*

Input received through public comment sessions is often of little benefit to agencies who hear only the polarized positions of the public. Nor is this governance practice of benefit to communities looking to meaningfully engage in the management of their natural resources. The shortcomings of these existing processes have driven much of the critical debate around wildlife issues into other arenas; without real adjustments to current approaches to public participation, it is likely that the value-based dimensions of wildlife management will continue to be debated in courtrooms and ballot boxes while agencies become increasingly irrelevant to the long-term future of conservation.

New inroads to participatory democracy may help agencies to balance competing values of wildlife decision-making through more engaged and informative processes, all while enhancing the legitimacy and scientific grounding of resulting management strategies. This would include, for example, deliberative processes that engage policymakers, agency staff, and citizens in meaningful dialogue about challenges and solutions. Evidence suggests that these governance processes, which involve an iterative framing of issues and solutions rather than a voicing of existing positions, may in fact help agencies to reach new segments of the public that they have historically struggled to engage, including women, people of color, and youth (Neblo et al., 2010). Shifts in governance arrangements, however, while potentially transformative at bringing new voices into conservation, may alone be insufficient to address the underlying cultural characteristics of agencies that have led to such tight lock-in around traditional values and ideologies. A meaningful transformation towards inclusive governance may also require internal adjustments to address the growing demographic and value misalignment between agencies and

the public. This may include, for example, recruitment and retention of more diverse employees or alterations to agencies' current funding models, which have reinforced the iron triangle and situated sportsmen as key clientele. Such actions require guidance from agency leadership that is open to innovative change and willing to encourage tough conversations about identity, race, gender, age, and ideological diversity in these organizations. Existing partnerships with Universities may be key in advancing training programs designed to help agencies in this transition by introducing current and future wildlife practitioners to critical concepts in the social sciences and humanities.

While broad-scale trends like those highlighted here are informative for understanding the barriers to change in public organizations, natural resource agencies across the United States exist within a myriad of different social, ecological, and political contexts that shape their needs and the needs of wildlife moving forward. Rather than proposing that agencies undertake an immediate transformation in their governance processes, this paper is intended to illustrate why current calls for agencies to be "more accountable" or "more adaptable" in their governing processes may fall short of achieving such a renaissance without considering the important role of history in shaping understanding of these concepts. A participatory turn in wildlife governance will require agencies to engage in long-term visioning and planning that is considerate of how existing paradigms shape their relationships with the public and willingness to engage those with diverse ideas in the decision-making process. Likewise, natural resource scholars who engage with this work must recognize that while broad proscriptions for "good governance" may provide much needed positivity in an otherwise bleak time for conservation, such calls must address the complex barriers that public organizations face in bringing about intentional change. If not, even the most well-intentioned efforts are unlikely to result in long-term benefits to wildlife or our increasingly polarized social communities. By exploring current governance challenges through the lens of complex systems theory, we can gain important insight into the opportunities and barriers for achieving more democratic and inclusive forms of decision-making that support the co-development of healthy human and wildlife populations. Understanding how wildlife management challenges and their potential

solutions are framed by multilevel and path dependent forces is an important first step to building a

sustainable future for conservation in a rapidly changing world.

CHAPTER 3 – ELITE TRANSFORMATION IN CONSERVATION: A CASE STUDY IN U.S.

WILDLIFE MANAGEMENT

1. INTRODUCTION

In 2017, Colorado's state wildlife agency, Colorado Parks and Wildlife (CPW), began a controversial study that involved the lethal removal of predators such as bears and mountains lions from parts of the state in an attempt to increase mule deer populations. The agency claimed that data from the study would provide a scientific basis for the use of lethal management, but faced push back from across the state, particularly from members of the public concerned about the use of "selective science with a bias towards increasing hunting" (Meridian Institute, 2016, pp. 2-3). The decision undertaken by CPW was a fundamentally value-based one, built on the assumption that species of human benefit like mule deer should be prioritized over predator species like bears and mountain lions. What was ultimately a political question about what species should be allowed to exist where and to whose benefit was reframed by CPW into a statement of undeniable biological truth: less predators equals more mule deer. "Science" is often used in this way as a political justification for making value-based decisions about how we manage our natural world and what species, resources, and people should access and occupy space (Decker et al., 1991; Wagner, 1995; Warren, 1997; Bocking, 2004; Doremus, 2005). In recent decades, science has become such a prominent tool for natural resource management that technically trained scientific experts have gained political standing, replacing publicly accountable politicians as the primary decision-makers over resources (Meynaud, 1968; Putnam, 1977). Given the inherently political nature of this work, how did technical expertise come to hold such a prominent position in decision-making and what makes technocratic governance models so intractable?

In this manuscript, we seek to outline how natural resource management agencies in the United States came to make political decisions under the veil of purportedly neutral science and how the prominence of science as a decision-making tool led to a significant transfer of power into the hands of an educated elite. Moreover, we examine how emerging participatory governance regimes challenge these

models and what this may mean for conservation. We open by contextualizing the intertwined roles of science and politics throughout history in the domination of nature and man, both in the U.S. and tracing back to the early days of the enlightenment. We then discuss the rise of *technocracy* – decision-making by technically-trained experts – in post-industrial societies, using Putnam's (1977) Theory of Elite Transformation to examine how these models of governance are reinforced by strong negative attitudes towards public engagement in decision-making and a "technocratic mentality" that reinforces these attitudes overtime. We offer empirical evidence of such a mentality in state wildlife agencies in the U.S. and discuss the implications of our findings amid calls for democratic reform in wildlife and, more broadly, natural resource management.

1.1 Science and politics

In his 1887 treatise *The Study of Administration*, President Woodrow Wilson advocated for a rational, scientific approach to the administration of public policy that sat "outside of the proper sphere of politics" (p. 210). At the heart of his essay was an idea that still resonates today: that amid increasingly complex challenges, decision-making rooted in "sound science" can foster solutions to the social and ecological problems that politics has been powerless to solve. The idea of policy based on expertise and rationality, however, was not new; such a philosophy could be traced back to the work of Henri de Saint-Simon, and his enlightenment successors before that, who argued for a world governed by reason and rationality above all else (Putnam, 1977; Barber & Bartlett, 2001; Latour, 2004). Wilson's proposal, however, had a profound effect on the governing institutions of the United States, giving rise to a new technocratic era in American natural resource policy where public administrators were tasked with management based not on public interest but scientific evidence (Spicer, 2010).

While technocracy was widely embraced for its apolitical character, the shift toward expert decision-making was intimately tied up in a significant transfer of power in post-industrialized societies toward those with skills training and advanced education (Bell, 1973). This "slipping sideways of power" (Meynaud, 1968, p. 30) ultimately elevated the interests and values of practitioners into state, national, and international political arenas. More recently, however, these same technocratic models of governance

have come under fire as modernization gives rise to self-expression values and increases demand for public participation in politics (Inglehart, 2018). In recent decades, calls for democratic reform have reverberated throughout the natural resource fields as scholars and practitioners alike argue that solving wicked challenges will require increasing public engagement in decision-making and advancing more adaptable and accountable models of governance (Lockwood, 2010; Armitage et al., 2012; Decker et al., 2016). Two competing models of governance – one which favors decision-making by scientific experts and another that preferences the input of a broad public – illustrate colliding forces of modernization that have profoundly shaped the landscape of American natural resource policy in the 20th and 21st centuries. These competing visions for management have stoked the fire of intense conflict over the distribution of power between experts and the public in decision-making and resulted in populist backlash to science, politics, and everything in between (Norris & Inglehart, 2016; Manfredo et al., 2017b; Lockwood, 2018).

The ongoing conflict over the proper roles of science and politics is apparent across natural resource management sectors in the United States. Forestry science has often been oriented toward high timber harvest rates, resulting in criticism that the U.S. Forest Service "adapted and distorted the science in pursuit of economic or political agendas" (Hirt, 1994, p. 47). The Bureau of Land Management has likewise been charged with applying rangeland science to political questions about who can and cannot obtain access to land, exposing the agency and the science underlying their work to critical questions about neutrality (Nie, 2004b). The tension between expert and public decision-making is also not unique to the United States or even to domestic politics. Scientific uncertainty associated with marine resources, for example, has led to the criticism that the International Whaling Commission uses and disregards scientific data depending on its alignment with the interests of powerful nations and actors (Andresen, 1989; Block, 2011). In response to these criticisms, calls for advancing public participation and oversight of administrative bodies in the U.S. have resulted in an opening of decision-making processes through policies such as the Administrative Procedure Act, National Environmental Policy Act, and state Sunshine Laws (Sullivan, 2019). These processes, which face sharp criticisms from those in agencies for creating barriers to efficient, science-based management efforts, have in many ways led to a resurgence of

technocratic ideologies (Doremus, 2005). Understanding why technical expertise has maintained such a prominent political role despite pressure for public involvement requires looking at the role of science through history in advancing political goals. We undertake this task in the next section.

1.2 Science, power, and the domination of nature by man

To understand the elite role of scientific experts in contemporary natural resource politics requires first acknowledging the fundamentally political role of science in the context of a modernizing society. Rooted in Judeo-Christian religious tradition that places God above man and man above animal, the separation of nature from society became the foundational ideology underlying perceptions of human progress in the western world, leading to a belief that for man to advance he must conquer the untapped resources of the earth and mediate the risk brought about by an unpredictable wilderness (White, 1967; Bookchin, 1982; Jasanoff, 2007; Latour, 2012). As hierarchical states began to centralize power in 16th century Europe and claim authority over natural resources, this ideology was institutionalized through the use of command and control practices designed to manage and exploit nature for human gain (Pattberg, 2007). The Scientific Revolution that would follow became a means of understanding and increasing the utility of nature, intimately tied up in existing political and philosophical perspectives of human-nature separation and the domination of man over the earth (Horkheimer, 1947). From then until now, these ideologies have been reinforced and spread around the world through cultural and political memes, colonization, the industrial revolution, and the rise of neoliberal capitalism, all of which position nature as a resource to be consumed in the never-ending work of human progress (Goldman, 2005; Pattberg, 2007).

As rapid technological advances propelled modernization, science became a linchpin of political power for western states, enhancing the extractive capacity of European and the American states and furthering the exploitation of nature and people across the globe (Putnam, 1977; Eckersley, 1990; Horkheimer et al., 2002). According to Leiss (1974, p. 16), "human activity becomes so much a part of the natural environment that mastery of nature and mastery of man are only two aspects of the same process", engraining science-for-domination into the political systems of the global West. Operating through the lens of human progress, science and enlightenment thinking came to wield tremendous

political power, building out a global political order and reinforcing the values, goals, and motives associated with domination (Pattberg, 2007). While science gained its prominent position as a neutral exploration of fact and reason, history became testament to the fact that "values determine which science matters" (Doremus, 2005, p. 28).

In that frame, *scientism* – or the use of science to answer social and political questions about how things should be – has allowed decision-makers to minimize political dimensions of natural resource management (Habermas, 1967). Doremus (2005) argues that "science is a politically appealing justification [for policy] because it promises objective, rational decisions. It is supposed to be free from emotion… The semblance of scientific objectivity helps [decision-makers] avoid uncomfortable and difficult debates over underlying values" (p. 225). The use science in decision-making prompts technocrats to operate within a singular value framework, while rejecting alternative values or ideologies as "politics" interruptive to efficient management (Wagner, 1995; Decker et al., 1991). In this way, the domination philosophies of wildlife management become cloaked behind a "veil of the legitimacy of science" (Decker et al., 1991, p. 525). With this historical perspective in mind, we explore how science became institutionalized in natural resource management in post-industrial societies and how an emergent culture of elite attitudes toward politics came to reinforce domination values by systematically excluding those with alternative perspectives.

1.3 Elite transformation and the technocratic mentality

From Wilson's 1877 treatise to today, scientism has played a profound role in shaping the direction and outcomes of natural resource management (Habermas, 1962; Bäckstand, 2003; Spicer, 2010). Just as early scientific advances built on the domination ideologies of the Reformation (Pattberg, 2007), modern iterations of science-as-policy built from the conservation philosophies of Aldo Leopold, Theodore Roosevelt, and Gifford Pinchot who sought to establish a use-oriented conservation paradigm and directed management towards that end. Trust in reason and rationality as a neutral means of governing became so pervasive over the 20th century that scientism was locked into decision-making "almost as a matter of natural law" (Doremus, 2005, p. 259). Public officials burdened by the needs and

interests of the public were superseded by technically trained experts who could carry forth conservation mandates outside of the realm of politics, resulting in an unprecedented transfer of power to public agencies and the technical experts who staffed them (Meynaud, 1968). Science – and particularly the natural sciences – became a tool for determining the appropriate state of nature without consulting the public on their preferences (Doremus, 2005).This perspective was reinforced within sciences epistemic communities in 1980, when National Academy of Sciences President Phillip Handler argued that "most members of the public usually don't know enough about any given complicated technical matter to make meaningful informed judgements" and thus, science-policy decisions should be left to the "knowledgeable wise men of science" (Petersen, 1984).

As technically trained experts gained political prominence, "technical skill becomes the base of and education the mode of access to power" in the post-industrial era (Bell, 1973, p. 348), radically transforming both the policy landscape and perception of the proper role of science and democracy in natural resource planning. In an effort to understand the rise of technocracy in the 20th century, Political Scientist Robert Putnam (1977) proposed that post-industrial societies were undergoing an elite transformation that elevated the voices of highly educated and specially trained individuals into positions of power. His thesis proposed that technocrats, particularly those trained in the natural sciences, came to view themselves as elite policymakers and became "offended by the intrusion of political factors into public decision-making" (Putnam, 1977, p. 396). In accordance with these views, he argued that technocrats expressed deep reservations about calls for increased citizen participation and instead favored policy based on what they saw as undebatable scientific truths (Putnam, 1977; Crick, 2005; Spicer, 2010). Public management became dominated by what Putnam referred to as a "technocratic mentality" that science was the proper foundation of policy and experts were the holders of scientific truths, uniquely capable of managing resources on behalf of a lay public (Putnam 1977).

This technocratic mentality rests on the assumption that values and political debate have little role to play in natural resource management. However, the domination values that underlie scientific approaches to natural resource efforts now appear to be in decline in contemporary society as

communities become more distant from the threats of an untamed wilderness that once plagued human progress (Dunlap, 2012; Inglehart, 2018; Manfredo et al., 2020). This shifting value context has resulted in political debates about resource management moving into courtrooms, public protests, and ballot boxes where social conflict can be more directly addressed. Such is indeed the case in contemporary wildlife management in the U.S., where a shift in values is driving many political questions about wildlife into venues more closely associated with direct democracy (e.g., wolf reintroduction in Colorado, banning bear hunting in Maine). This venue-shift illustrates the challenges faced by wildlife agencies to address the value-laden nature of management; but while calls for governance reform have become increasingly prevalent in recent decades (Beck, 1998; Nie, 2004a; Decker et al., 2010), little support for increased public participation appears to exist among state wildlife agency employees (Sullivan, Chapter 1).

Colorado Parks and Wildlife's predator control study introduced at the outset of this chapter illustrates the intertwined and complex relationship between science and politics in wildlife management. Despite immense public pushback, the decision to lethally remove predator species was ultimately pushed forward by technocratic experts who applied biological principles about population dynamics to what they viewed as a technical issue – declining mule deer populations. Given the inherently political nature of wildlife management and growing demand for public involvement in government, how have these elite expert models remained so resistant to change? Building from Putnam's (1977) Theory of Elite Transformation, we explore whether wildlife agencies can be characterized by a technocratic mentality that fosters negative attitudes towards politics in wildlife decision-making.

2. METHODS

To see if such a technocratic mentality was present in wildlife conservation, we analyzed data from a 2018 study of state wildlife agency employees, conducted through an online survey in 30 agencies across all regions of the U.S. (n = 10,669; for more information on survey methodology, see Chapter 1). The survey was part of a broader investigation of public values toward wildlife in America and sought to understand how the characteristics of wildlife agencies and their employees influenced and were influenced by changing public interests in wildlife conservation (Manfredo et al., 2018). While research

on the elite nature of wildlife decision-making was not our central area of study, we found the concept to emerge as salient both in terms of the magnitude of agreement to selected survey items and in response to an open-ended question, following a list of agency characteristics, that stated: *The list of phrases above may not have represented all your views about the characteristics of your agency. Please use the box below to provide us with any additional words or phrases that you believe are "very characteristic" of your agency*. Given the broad nature of our question, we first conducted preliminary coding to segment responses related to politics and expertise (n = 338). To help make sense of our findings and direct future research efforts, we then coded these comments to determine whether a technocratic mentality might be present with agencies, using four prominent dimensions outlined by Putnam (1977): 1) science is the proper foundation of policy; 2) trained experts are uniquely qualified to make policy decisions; 3) political debate is a misunderstanding of scientific truths; and 4) efficiency and not justice is the goal of management (Figure 3.1). Below, we report results from these analyses, which characterize and add nuance to our understanding of elite attitudes towards wildlife management and conclude by discussing the implications of these findings amid calls for governance reform.
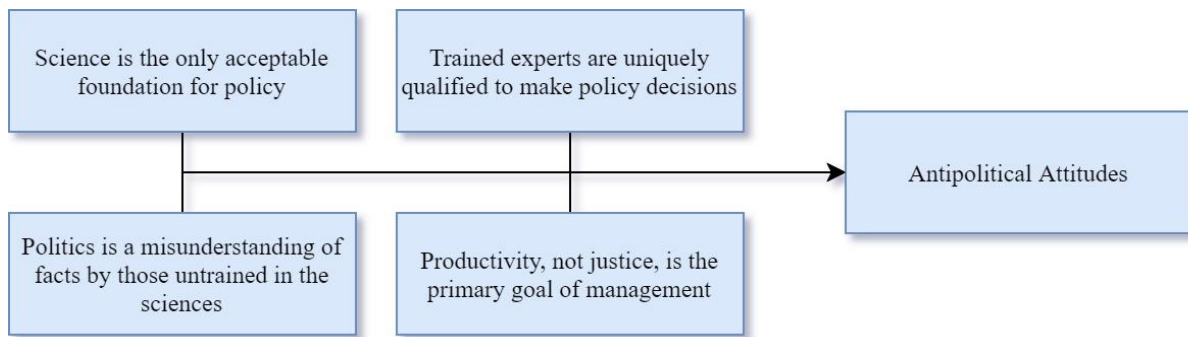

Figure 3.1: How a technocratic mentality influences negative attitudes towards politics (derived from Putnam's 1977 Theory of Elite Transformation)

3. CASE STUDY: ELITE ATTITUDES TOWARDS POLITICS IN STATE WILDLIFE AGENCIES

U.S. wildlife agencies were born amid the technocratic boom of the late 19th century in response to the rapid decline of iconic American species. As unabated harvest, commercial hunting, and wildlife bounties threatened wildlife across the country, sport-hunters and special interest groups began to lobby for stricter conservation laws, and, by the mid-1930s, all states had established regulatory wildlife agencies (Manfredo et al., 2017b). The philosophy of U.S. wildlife conservation, institutionalized through the North American Model of Wildlife Conservation, centered around wildlife as a consumptive resource to be managed on behalf of the public through the application of scientific principles (Organ et al., 2012). The emergence of these new regulatory agencies centralized power and resources at the state level and led to the pervasive disenfranchisement of native and local communities for whom wildlife had long been a subsistence resource and a symbol of human-nature interconnection (Warren, 1997). Rather than a value-neutral shift to scientific management of wildlife species, the emergence of technocratic wildlife agencies represented a massive centralization of political power founded upon hierarchical models of governance and western domination ideologies (Warren, 1997). These values became further reified and engrained in agency culture through hiring processes that targeted those who were educated in these ideological frameworks and through agency funding models that created dependence on hunting and fishing license sales. The pervasiveness of domination orientations in state wildlife agencies are evidenced today by the continued prominence of traditional value types among agency employees despite widespread shift away from these values in the public (Sullivan, Chapter 1).

In recent years, the values gap between wildlife agencies and the public has led to growing concerns among practitioners and conservation scholars about the relevancy of wildlife agencies in a changing social and political context, driving calls for more inclusive forms of decision-making that extend political considerations to members of the public with non-traditional orientations toward wildlife (Beck, 1988; Holling & Meffe, 1996; Nie, 2004a; Decker et al., 2016). While these calls have indeed raised awareness about the shifting context of wildlife decision-making, agencies to date still largely

prioritize expertise and established relationships with stakeholders over input from a broad public

(Sullivan, Chapter 1). Has a technocratic mentality, as proposed by Putnam (1977), been responsible for

the continued prominence of technocracy in the face of calls change?

3.1 Attitudes towards politics in state wildlife agencies

Due to its technocratic origins, wildlife management in the U.S. is premised largely on biological

science aimed to manage species at the population level and governed largely by those with expertise and

skills training in this area (Decker et al., 2012). Recent calls for democratic reform pose a significant

challenge to such political structures that preference input from experts and orient science toward a

particular domination-oriented vision for conservation. It is against these conflicting visions that we

explore the emergent culture of elite attitudes towards politics in state wildlife agencies. First, we found

264 unique references to the word "politics" in our data, making it the third most commonly used word

behind "agency" and "management" (Figure 3.2). In almost all cases, respondents tied the word to
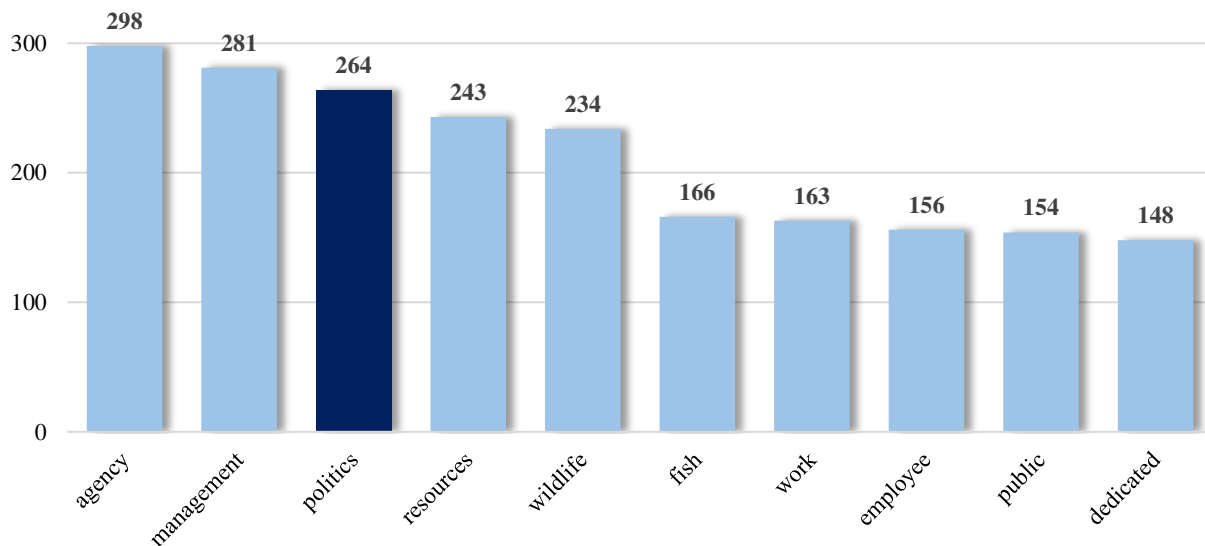

Figure 3.2: Word frequency for open-ended survey response

negative qualifiers, describing their agencies as "*too political*", "*beholden to political influence*", or likely

to "*fold*" or "*succumb*" to political pressure. While the vague nature of comments often made it

challenging to ascribe these negative attitudes to any specific group or process, it became clear through

our analysis that four groups of non-experts were the most likely to be targeted: members of the public,

special interest groups (e.g., outfitters, wildlife protection non-profits), appointed members of state

wildlife commissions, and elected officials. Example comments illustrating the multidirectional nature of

these attitudes are shown in Table 3.1. Members of the public, however, were the most likely to be

Table 3.1: Excerpts representing multidimensionality of negative attitudes toward politics

Orientation	Example Excerpt
Special Interest Groups	*"sympathetic to special interest groups [hunting interests] with a lot of money"*
Members of the Public	*"bends over backwards to make the public happy even though this leads to scientifically poor resource management decisions"*
Appointed Commissioners	"*The commissioners are meant to advise and be a voice for the people but instead are given far too much power and pull despite not being biologically trained…"*
Elected Officials	*"frustrated with lack of support from legislators who do not care about the resources despite their talking points during the election"*

singled out as posing an interruption to scientific decision-making and, in many cases, even blamed for

poor conservation outcomes. For example, one respondent noted that their agency "*bends over backwards*

to make the public happy even though this leads to scientifically poor resource management decisions",

while another stated that their agency "*often puts the needs and desires of the public and stakeholders*

(politics) above the good of the resource (wildlife)". In the following sections we discuss how this elite

political culture of wildlife management in the U.S. links to perceptions of the proper role of science and

expertise, applying Putnam's characterization of a technocratic mentality to wildlife administration.

3.2 Science is the proper foundation of policy (but politics get in the way)

The idea that science should serve as the foundation for wildlife management is a key tenant of

the North American Model for Wildlife Conservation (Organ et al., 2012), and one that has shaped the

physical and political landscapes of the U.S. for over a century. However, many employees implied through their open-ended comments that the ability to use science as a decision-making tool is critically handicapped by the political involvement of non-experts in decision-making. In total, 62% of our respondents indicated a belief that their agency prioritizes politics over science in the decision-making process. We believe these findings may be suggestive of a belief among wildlife agency employees that conservation is becoming too politicized. To illustrate, a number of respondents indicated that while decision-making *should* be based on science, that objective often got sidetracked by political pressures. For example, one respondent noted that *"currently, we are very politically influenced… scientific data has too often been ignored or pushed aside. We have no backbone to stand up for these things and allow a small fraction of the public to influence our actions statewide."* Complementing this sentiment, another respondent noted that employees in their agency "*always prefers to use information derived from rigorously collected data as the basis for management strategies and activities*" but added that "*there have been a few key situations where the agency administrators didn't stand up to political or popular pressure to defend the correct and needed biological approach.*"

As illustrated in the comments above, science and politics are often diametrically opposed to one another in the minds of agency employees. Respondents frequently used dichotomous language to describe the characteristics of their agency, such as "*management decisions are made politically instead of biologically*", or that their organizations "*let politics manage resources instead of science*". By viewing politics as inherently opposed to science, these practitioners often buried the political dimensions of their agencies' use-oriented conservation goals, characterizing activities like hunting as aligned with scientific processes and non-consumptive perspectives and activities as more political in nature. For example, one respondent noted that their agency "*puts hunters first because hunters are the true conservationists*", while another noted that their agency is "*often forced into political expediency as opposed to what is in the best interest of wildlife and hunters*". Additionally, one respondent noted that it "*seems science is less important than social issues [and that] management for anglers and hunters is being infringed by privatization and outdoor enthusiasts that don't participate in either hunting or angling but have a*

growing voice." We believe these findings may be illustrative of a broader cultural backlash against changing values in society (Manfredo et al., 2017b), where traditional values are taken at face value while non-traditional values and ways of interacting with wildlife are considered antithetical to effective, science-driven wildlife conservation.

3.3 Trained experts are uniquely qualified to make policy decisions

If biological science is assumed to be the proper foundation of wildlife decision-making, then technocrats, as the holders of that scientific knowledge, are likely to believe that they are uniquely qualified to make policy decisions (Putnam, 1977). Our findings indeed illustrate strong identification among wildlife agency employees with expert credentials, with 95% of respondents presenting their agencies as "experts in natural resources" in response to a survey item that asked employees to indicate the extent to which a series of traits may be characteristic of their agency (survey attached in Appendix A). Many respondents also noted the expert credentials of their agencies in open-ended comments, including for example one who stated that *"as a biologist, I feel like our state does a good job of protecting our natural resources to the best of our ability. We put wildlife first and have many experts in our agency."*

Perceptions of expertise alone, however, do not indicate an elite mentality. Our findings further illustrate that across wildlife agencies, 95% of employees characterized their agencies as "protectors of natural resources" based on the question outlined above. These findings support assertions made previously by Putnam (1977) and Doremus (2005) that technocrats view themselves as serving in a dual capacity as experts and advocates, and moreover, that this positioning makes them unique in that they are more informed than elected officials but more politically savvy than their academic and research counterparts. This dual capacity was also evident in many of our open-ended comments, including one respondent who noted that *"[Our agency] employs some of the best minds in fisheries management. These are highly educated individuals, each dedicated to what they see as a moral imperative to protect and conserve both fish and the unique fishing culture of [our region]."* Many respondents, moreover, situated politics as a barrier to serving in this capacity. For example, one individual asserted that in their

agency, *"We are afraid to be strong advocates for conservation; we now value compromise and are avoiding political strife more than doing the right thing",* while another stated that their agency is *"filled with committed and passionate experts (stewards of natural resources) who are held under the constraints of state and federal politics."*

The belief that experts are uniquely well positioned to act on their moral convictions but face political barriers to doing so also resulted in critiques of state wildlife commissions. These commissions, comprised of a small group of citizens in most states with interest or knowledge about wildlife often appointed by the state governor, are intended to serve as the decision-making arm of wildlife agencies (Decker et al., 2012). A number of our open-ended comments expressed a distrust for these commissions specifically because of a perceived lack of technical training, which employees feared allowed for commissioners to be swayed by public opinion. In one case, a respondent stated that *"the commissioners are meant to advise and be a voice for the people but instead are given far too much power and pull despite not being biologically trained…",* while another argued likewise that "*political appointments to natural resource commissions result in a commission with poor understanding of science, swayed by loud voices rather than good science."*

Taken together, these comments illustrate a belief that scientifically trained experts are uniquely qualified to make policy decisions. In the face of calls for governance transformation towards more democratic decision-making, this technocratic mentality becomes a foundation from which negative attitudes towards politics emerge to sustain the status quo. One comment in particular illustrated the powerful influence of such a mentality on fostering backlash to calls for increased public participation and a preference for elite decision-making:

> "*We involve way too much input from too many people so that no hard decisions can ever be made. Decisions are being made by a vocal minority rather than being science based. Decision making is being taken away from [our agency] and is not in the hands of the experts. Decisions are being made by stakeholders with strong views and values. Decision-making needs to come back to the agency and to the experts."*

3.4 Political debate is a misunderstanding of scientific truths

In his elite transformation theory, Putnam proposed that technocrats do not simply dislike politics, but rather they view contrary political positions as a misunderstanding of scientific truth by non-experts. Our data indeed illustrated that many agency employees drew distinctions between scientific fact and political falsehoods, as illustrated by one respondent who stated that their agency was "*influenced heavily by politics rather than by science and conservation truths*" while another stated that their agency was "*more concerned with public opinion than biological facts*". This ideology could further be seen in the distinctions that respondents drew between science, which was perceived to benefit resources, and politics, which was perceived to harm wildlife. For example, one respondent noted that their agency was "*overly sensitive to political pressures regardless of irreversible or long-term impacts to the fish and wildlife resource*". This was further reinforced by findings from a set of survey items asking employees to indicate which of a series of objectives their agency placed priority on. Employees who believed their agency prioritized science over politics were more likely to believe that their agency focused on meeting the needs of resources rather than the needs of the public ($\chi^2 = 1484.95$ [1], $p < .001$, *Cramer's V* = .388). Some respondents also indicated that key decisions for wildlife management are being made based on political motivations that directly contradict the "correct" scientific decisions being made by technically trained experts. For example, one respondent noted that their agency has a "*tendency to bend or fold based on political or social pressure that may not always be in line with the best biological science or professional staff knowledge and recommendations*".

Given these findings, it is unsurprising that most open-ended comments alluded to public engagement as a procedural obligation rather than an opportunity for actually utilizing public opinion and insight in planning and management. For example, one respondent stated that *"Our agency is really focused on pleasing the public. I think that comes to an extent but once laws are made, those need to be enforced whether the public complains or not. I think it would be better suited to educate the public on the processes that our agency follows so they can understand why rules and regulations are what they are."* This comment, and others like it, illustrate the technocratic mentality in drawing a contrast between

the "correct" decisions made by experts and the necessary but burdensome process of engaging with others in value-based discussions not based on scientific truths about wildlife management.

Beliefs about the elite role of "the knowledgeable wise men of science" pitted against an unskilled and hyperpolitical public have dominated wildlife agency culture for many years but may mask true value differences among members of the public (Decker et al., 1991). Our findings support assertions made by Putnam that technocrats problematize involvement of non-technical experts in decision-making and view them, even in the case of appointed wildlife commissioners, as lacking the necessary knowledge and skills to craft effective public policy. Understanding why this is the case requires knowing more about how technocrats view the end goal of management, which Putnam argues is more related to productivity (e.g., increasing game numbers, reducing environmental threats) than justice (e.g., creating an inclusive vision for conservation). We test this assertion below.

3.5 Productivity, not justice, is the primary goal of management

In explaining the outcomes of a technocratic elite transformation, Putnam argued that public agents view the end goal of management to be productivity rather than procedural justice or fairness. Our findings provided evidence to support this assertion, with only 20% of respondents believing that it was "very characteristic" for their agency to be equitable in its approach to management, and only 25% of respondents assigning the same rating to indicate that their agency follows a "fair process" for decision-making. Our open-ended survey responses provided further insight into not only the productivity goals for wildlife conservation, which are largely framed around domination, but also the ways in which procedural dimensions of decision-making are perceived to be a burden to scientific management toward these ends. For instance, some respondents used language to allude to their agencies as "*process driven instead of product driven*" or "*impeded by too much process*", indicating the perceived interruptive nature of processes for accountability and inclusivity. One respondent directly described the burden of procedural justice, stating that their agency was "*overly focused on fair process, integrity, and being transparent.*" Another likewise drew a strong contrast between procedural justice and positive conservation outcomes, articulating that "*I think that sometimes we get too focused on what 'the people' want because a small*

group of people is very loud, and we forget what we need to do for the wildlife". Prioritizing productivity over process in these ways illustrates the role of a technocratic mentality in reinforcing experts as key decision makers, managing wildlife through a single value-frame and placing value-based discussion into a realm outside of the proper decision-making sphere. Taken together across these four categories, we believe our data provide substantive evidence of a technocratic mentality in wildlife management. Below, we draw out the meaning of these findings amid a changing social value context in America and illustrate how colliding forces of modernization are shaping understandings of science and politics in wildlife management narrowly and natural resource policy broadly.

4. DISCUSSION

Modernization and the never-ending quest for human progress have oriented science, often thought of as a neutral search for truth, toward specific domination objectives. As proposed by Putnam (1977), and reaffirmed in our findings, the value placed on science both within and beyond natural resource management has elevated the voices of experts into an elite decision-making capacity and become culturally reinforced through a technocratic mentality. In the last 50 years, however, modernization has also increased self-expression values among members of the public and led to increased demand for public participation in natural resource decision-making (Inglehart 2018). These two models of governance – one preferencing the elite role of experts in decision-making and another favoring democratic processes – represent colliding forces of modernization that have given new life to old debates about the proper role of science and politics in resource management. As these discussions emerge, public agencies are retreating around their technocratic models of governance and expressing reservations about the need for more public involvement in decision-making. Our findings indeed illustrate that wildlife management in the U.S. is tied up in a culture of negative attitudes towards politics, fostered by a technocratic mentality that views experts as uniquely capable of making decisions about the proper state of nature on behalf of a non-expert public. We believe that these attitudes, rather than being individual cognitions or personal responses, represent emergent characteristics of agencies designed for self-preservation in the face of political uncertainty and shifting power structures. Of course, such

resistance to governance reform is not homogeneous across the landscape, as evidenced by a handful of open-ended comments expressing the need for change. Likewise, in his empirical study of elite transformation in post-industrial societies, Putnam (1977) found similarly that a diversity of attitudes towards politics and public engagement existed among individuals, but argued that "to concede that some technocrats may be more reformist or more conservative than others on the substance of policy is not to deny that they may share certain fundamental similarities in their approach to the policy-making process" (p. 388). As pressure mounts for agencies to transform their governance structures and redistribute power across a broader range of people, technocrats broadly lash back against efforts they see as challenging existing institutions and power structures that favor technically trained elite. The need for neutral science in decision-making becomes a justification for the continued role of experts in decision-making, most often without recognition of the value-laden nature of management goals.

Importantly, wildlife agencies do not represent an anomaly in their use of science as a justification for particular political ends. Scholars across natural resource fields note this practice in decision-making (Decker et al., 1991; Wagner, 1995; Doremus, 2005), illustrating what philosopher David Hume referred to as the is/ought problem where individuals make normative claims about what ought to be based on positivist claims about what is (Mackie, 2003). While not always malicious in its intent, some scholars believe that the manipulation of science for political ends may in fact be leading to a growing mistrust of science itself: "In countless environmental controversies, opposing parties assemble scientific evidence, expressing their conflicting interests and values in terms of scientific knowledge. Citizens are increasingly unwilling to accept uncritically the judgements of experts, and this has become one of the primary political dynamics of environmental decision-making" (Bocking 2004, p. 4). In what has been classified as a post-truth era, science applied to specific political goals may in fact be paving the way for the populist anti-science backlash that has prevented us from advancing a unified front around immediate environmental challenges such as climate change and biodiversity loss. Further analysis of the interrelationship between these phenomena is critical for overcoming these challenges.

The growing backlash to both science and politics then begs the question of what exactly the appropriate roles of these two factors are in natural resource decision-making. According to Bell (1973), much of the confusion around the role of experts in policy stems from the failure to distinguish two separate functions of expertise. The *technician* on the one hand applies knowledge and rationality to questions of science, and the *technocrat* on the other engages in the exercise of power. "Technical knowledge--the administration of things--is a necessary and growing component of many kinds of decisions, including political and strategic ones. But power--the relations between men (*sic*)-- involves political choices that are a compound of values and interests and cannot always be 'ordered' in a technical way" (p. 80). Increasingly, scholars in the field of science and technology studies propose that both science and public discourse may play a critical role in providing evidence for the best path forward, but argue that doing so requires a shift away from our current forms of hierarchical governance toward more discursive processes that situate scientific and civic epistemologies on a more level playing field (Bookchin, 1982; Latour, 2004; Sagoff, 2007; Jasanoff, 2011). While agencies may of course choose to maintain their technocratic character, it is likely that in the face of growing social conflict they will face increasing challenges to their authority and declining support from a politically engaged public.

Our findings suggest that negative attitudes towards politics stem from an institutionalized belief, both in formal policy and normative practice, that science alone can solve our social, political, and technical challenges. However, as Doremus (2005, p. 305) points out, "It may be that in the past, this approach produced more positive conservation results with less political hassle than would have followed from frank confessions of the limits of scientific information. If ever they existed, however, those days are gone." As climate change, water instability, and global biodiversity crises intensify, resources become increasingly scarce, and therefore increasingly political. As such, the social, economic, and ecological challenges facing natural resource managers in the years ahead are unlikely to wane. In the new and highly value-diverse social context, management guided by science is necessary but likely not sufficient for addressing these wicked challenges. By exploring the deep roots of elite attitudes towards politics within natural resource decision-making and contextualizing those attitudes within the frame of value-

laden science, agencies may become more aware of how their own social processes are the result of

calculated political decision-making and begin to imagine new ways of bridging the gap between science

and the interests of a changing public.

CHAPTER 4 – THE CULTURAL CONTEXT OF TECHNOCRACY IN WILDLIFE CONSERVATION

1. INTRODUCTION

Globally, wildlife conservation is in the midst of a critical historical moment. Alongside ecological challenges of climate change and habitat loss, conservation organizations are operating in a rapidly changing social context marked by shifting values, populism, and increased demand for public engagement in decision-making (Manfredo et al., 2017b; Manfredo et al., 2020). However, participatory models of conservation mark a significant divergence from current technocratic practices, which place power over natural resources narrowly in the hands of decision-makers with technical skills training and advanced education. Conflict over who gets to decide the future of wildlife conservation has resulted in significant challenges to government agencies and non-profit organizations engaged in this work. In the U.S., citizens use public ballot processes and lawsuits to bypass and overturn decisions made by government agencies who they feel don't carry forward their conservation visions (Nie, 2004a; Manfredo et al., 2017b). Elsewhere, protests over "fortress conservation" policies that displace indigenous communities in the name of wildlife protection lay bare the complex social dimensions of environmental protection (Brockton, 2002; Chandra, 2018). Against this backdrop, it becomes abundantly clear that conservation is less a technical problem to be solved than a political process to determine which vision for wildlife will win out, to whose benefit, and at whose expense (Laswell, 1936; Myers et al., 2018).

So why, in the face of such resounding social and political conflict, do conservation organizations continue to rely on biology to answer what are fundamentally social questions? Undoubtedly, technocratic decision-making can point to significant conservation successes, from the resurgence of carnivore species in Europe and bald eagles in America to the slow recovery of mountain gorilla populations in east Africa (Robbins et al., 2011; Boitani & Linnell, 2015). However, the immutability of technical expertise as the primary driver of decision-making in conservation likely has less to do with conservation outcomes than entrenched political power. The technocratic governing processes at the heart of wildlife conservation, which take little account of the public's interests, needs, or opinions about wildlife, may instead be

thought to be co-evolving alongside a broader social culture that shapes how power is distributed in society. In particular, we propose that conservation organizations in societies with strong *domination* values, defined by the belief that both nature and humankind can be controlled, manipulated, and used for human benefit (Horkheimer et al., 2002; Manfredo et al., 2020), are more likely to have governance processes characterized by hierarchy and autocracy (i.e., powerful leadership, closed decision-making systems) rather than participation. In turn, we argue that the power afforded to elite technocrats reinforces those same domination values in society through the application of scientific practices that position wildlife as resources to be managed and consumed for human benefit.

In the sections that follow, we use systems thinking to illustrate how technocratic decision-making came to be such a prominent political tool for wildlife conservation and how this type of autocratic governance is tied into bigger cultural forces in society. We then use the United States as a case study to demonstrate how states with divergent cultures result in sharply contrasting governance arrangements for wildlife conservation. Our approach to understanding governance as function of culture makes a significant theoretical contribution by combining concepts from political culture studies, social psychology, and democratic theory to paint a fuller picture of the ways in which governance outcomes are influenced by the social systems that they exist within. To understand the mechanisms and implications of such a cultural view of conservation governance, we must first explore how the exclusionary technocratic models of governance that exist today came to dominate wildlife conservation.

1.1. Elite transformation in wildlife conservation

Wildlife conservation today is deeply rooted in the use of science, and biology in particular, to answer questions about how animals can and should exist on the earth (Warren, 1997; Riley et al., 2002). Such technocratic models of governance are often lauded for their neutrality and grounding in scientific truths, but wildlife conservation is a heavily political project, requiring value-based determinations about which species can exist where, when, and to whose benefit (Decker et al., 1991; Doremus, 2005; Pattberg, 2007; Sullivan, Chapter 2). Domination ideologies sit at the heart of many of these decisions (Horkeimer, 1947; Leiss, 1994; 2007). The link between biological science and domination can be traced back to the

Reformation and early enlightenment where scripture asserted man's dominion over the earth and science began to offer the tools to efficiently secure earth's resources for human benefit (Pattberg, 2007). The taking – and sometimes near complete eradication – of wildlife species became an economic linchpin for powerful nations who began to apply scientific principles to the exploitation of natural resources not only within their borders but across the territories they colonized through the 18th and 19th centuries (Pattberg, 2007; Mbaria & Ogada, 2016; Sullivan, Chapter 2). Science became a tool, used by those in power, to dominate nature for the purpose of human progress and led to a significant reallocation of resources away from communities and into the hands of powerful western elites and aligned special interests (for example, wealthy sportsmen and tourism enterprises; Warren, 1999; Mbaria & Ogada, 2016).

While science has long been used for securing access to natural resources, it was not until the mid-20th century that technical expertise in these areas became a defining model of political decision-making. In the years of economic and political security following World War II, modernization brought increased access to higher education (Inglehart, 2018). As wealthy, predominantly white (and mostly male) individuals gained advanced degrees, technical skill and expertise became a primary "mode of access to power" (Meynaud, 1968; Bell, 1973, p. 348) within and beyond the conservation realm. Overtime, traditional political decision-making by publicly accountable elected officials and community members were replaced with decision-making by the "knowledgeable wise men of science" (Petersen, 1984) who occupied government agencies, higher education institutions, and international non-profits. This shift was not just symbolic but marked a significant centralization of power in the hands of an educated elite (Meynaud, 1968; Jasanoff, 2017). Reinforced by the "veil of the legitimacy of science" (Decker et al., 1991, p. 525), technocracy thrived in post-industrial societies (Putnam, 1977) and eventually spread across the globe through neocolonialist encroachment of western non-profits and financial institutions into community conservation efforts in Africa, Asia, and the South America (Goldman, 2005; Taylor & Buttel, 2016).

While modernization played a significant role in advancing technocrats into positions of political power in post-industrial societies, these same processes have also driven significant cultural change,

including for example, social values change, skepticism of government, and new demand for transparent and accountable political processes (Dalton, 2005; Inglehart, 2018; Manfredo et al., 2020; Sullivan, Chapter 2). The changing social landscape of wildlife conservation has resulted in new challenges for practitioners who have historically been disengaged from the political dimensions of their work and has, in recent years, led to significant pressure for reform. While some organizations operating in this field have taken up the call for more participatory processes, others have retrenched around their technocratic roots and lambasted the "politicization of conservation" (term taken from Peterson et al., 2019). Understanding why these different responses emerge requires a deeper exploration of how conservation's governance institutions have evolved in response to a set of unique social and politics contexts.

2. A SYSTEMS VIEW OF CONSERVATION GOVERNANCE

Contextualizing governance through a systems framework is critical to understanding how, where, and why technocratic conservation governance models have emerged and been maintained over time. Rather than viewing technocracy as a static outcome of the need for sound science and efficiency in conservation, a systems model would propose that these elite political cultures are a manifestation of western domination values, continuously reinforced by conservation organizations in an attempt to adapt to their social context. Indeed, wildlife agencies and non-profits originating in the U.S. (which have since come to have a significant global reach) emerged in a historic era defined by domination values which positioned wildlife as a resource to be managed for human benefit (Manfredo et al., 2017b; Sullivan, 2019; Sullivan, Chapter 2). These values suggested a new model of cultural understanding, where man asserted his dominance over wildlife and as an extension, other people, to advance Western society (Leiss, 1974; Bookchin, 2010; Taylor & Buttel, 2015). Just as hierarchy emerged in human relationships with wildlife, it too came to dominate the political culture of conservation and centralized power in the hands of an educated elite at the expense of engaging broader publics. Domination values were culturally reinforced, for example, through stories and imagery about wildlife and wild spaces as "other", and through conservation institutions that prioritized input from value-aligned stakeholders (e.g., hunters and anglers) over those with competing ideologies (Gill, 1996; Manfredo et al., 2017b). Empirical studies

support the presence of a strong association between social values and political culture (Wildavsky, 1985; Inglehart, 1988; Pye & Verba, 2015) illustrating, for example, how societies with more traditionalistic values are significantly less likely to engage the public in decision-making (Sharkansky, 1969), while societies with strong survival values rank significantly lower in ratings of democracy as classified by the Freedom House Democracy Index (Inglehart, 2000).

While values play a crucial role in defining culture, a systems view would propose that values exist as one of many components, from norms and attitudes to demographics, politics, and language, that interact to influence culture (Kitayama, 2002). Research shows, for example, how culturally tight societies (societies with strong social norms and little allowance for deviant behavior; Gelfand et al., 2011) show a preference for autocratic leadership characterized by highly centralized authority and clearly articulated rules and punishment (Aktas et al., 2016). Political trust appears to play a central role in communicating these political culture cues to organizations (Dalton, 2004; Van der Meer, 2017). Defined as the "system of empirical beliefs, expressive symbols, and values which define the situation in which political action takes place" (Verba, 2015, p. 513), political culture is a useful concept for understanding the degree to which citizens' concerns are addressed by those in power and represents an important and often overlooked aspect of broader social culture. Rather than emerging and operating in isolation, political culture and the trust pathways through which it is communicated appears to be shaped by dominant political traditions of a region as well as the evolving values, norms, and attitudes of a society toward political engagement (Almond & Verba, 1963; Elazar, 1984; Dalton, 2005; Wynne 2013). In his research on democratic variability, for example, Putnam (1994) found that culture played a critical role in explaining variance in trust across the northern and southern parts of Italy, arguing that rather than an evaluative standard of tangible outcomes, an individual's proclivity to trust was "an emergent property of a social system, as much as a personal attribute" shaped by the "the social norms and networks within which their actions are embedded" (Putnam, 1994, p. 117). In this conceptualization, social and political culture are part of an intertwined system, co-evolving over time (Kitayama, 2002).

Taken broadly, a systems view of culture suggests that governance models evolve and adapt in response to their social context. Through this lens, technocracy is an emergent institutional structure that uses science to reinforce domination values and places power narrowly into the hands of elite experts as a response to social preferences for hierarchy, rules, and structure. Rather than technocracy serving as a means of apolitical governance which results from a set of conscious political choices, the primacy of science and expertise in wildlife conservation "reflects and reproduces normative models of social relations and cultural and moral identities" (Wynne, 2013, p. 170). In the sections that follow, we illustrate the iterative relationship between social and political culture through a case study of wildlife conservation governance in the U.S. and discuss how these iterations influence governance design.

3. DIVERGENT POLITICAL CULTURES IN U.S. WILDLIFE CONSERVATION

If conservation governance in fact emerges in response to broader systems within which it is embedded, then we would anticipate that societies with different cultures would have markedly different governance approaches. Specifically, we would expect that societies more heavily rooted in domination values exhibit support for authority, therefore leading to higher levels of trust in government and ultimately, more technocratic approaches to management. To illustrate, we undertake a case study of wildlife conservation in the U.S., focusing specifically on two states – New York and South Dakota – that exhibit significant differences in their composition of domination values. These differences are not static; while domination ideologies have historically been pervasive across the U.S., modernization in the post-industrial era has resulted in high rates of urbanization, education, and wealth accrual that have shifted the social landscape, and as a result social values, across the country (Manfredo et al., 2020). Specifically, research reveals how these changes have led to a shift away from domination and toward mutualism values that situate wildlife as an extension of human social networks, deserving of rights and caring (Teel & Manfredo, 2009; Manfredo et al., 2009; 2020), which poses a fundamental challenge to traditional models of wildlife decision-making premised on consumption and use for human benefit. The rate of change and how it unfolds may differ across states given variation in state-level modernization forces and wildlife values compositions. Therefore, we use our findings from these case studies as guidance to

develop a simplified model to examine patterns of relationships between cultural variables and governance characteristics more broadly.

3.1 Methods

3.1.1 Data collection, measurement, and analysis

   To paint a nuanced portrait of cultures within our two case study examples, we rely on a variety of data sources that draw out the cognitive, political, and demographic traits of each. Rather than focusing on any one dimension alone, our intention is to illustrate culture through a pattern of contrasting findings across these dimensions, as follows. Information on values, norms, and behaviors associated with domination were drawn from a 2018 study of wildlife values in America (n = 23,846)[5], which measured both wildlife values (e.g., the percent of individuals within the state holding a strong domination orientation)[6] and social values more broadly (i.e., maintaining social order, adapted post-materialism index; Inglehart & Abramson, 1999)[7], as well as behavioral variables, such as the percent of individuals within the state who self-reported engaging in hunting the previous year. Data on social norms was measured as the percent of individuals within each state who perceive strong rules about appropriate behavior and associated sanctions for violating those rules[8], as well as through the inclusion of Harrington and Gelfand (2018)'s rankings of normative tightness. Socio-demographic characteristics for each state such as racial and religious diversity were acquired from secondary sources (American Community

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[5] For more information on sampling, survey methodology, and data weighting for these surveys, see Manfredo et al. (2018). Survey instruments and administration procedures were approved by Colorado State University's Institutional Review Board (protocol 02-147H).

[6] Domination values were measured using a set of 10 survey items representing basic beliefs about hunting and wildlife use (Manfredo et al., 2009; Teel & Manfredo, 2009) on a scale from 1 (strongly disagree) to 7 (strongly agree). Individual scores were computed as the mean of responses across this set of items following reliability analyses (Chronbach's alpha = .817) and scaled to the state level as the percent of individuals within a state scoring above the scale mid-point (3.5) based on this composite score (see Chapter 1 for more information on wildlife value orientation methodologies).

[7] Measured as the percent of individuals in a state's public who selected "maintaining order in the nation" from Inglehart & Abramson's (1999) four item post-materialism index.

[8] Measured across a set of three items on a 1 (strongly disagree) to 5 (strongly agree) scale (Chronbach's alpha = .733) designed to assess the strength of social norms (e.g., *in this state, if someone acts in an inappropriate way, others will strongly disapprove*). Items derived from Gelfand et al. (2011). Aggregated based on the percent of individuals within the state/agency who scored above the scale midpoint (2.5).

Survey, 2018). Finally, we used election results from the 2016 presidential election (Associated Press, 2016) as well as trust in state wildlife agencies[9] to represent the political dimensions of culture within these states.

To measure the participatory nature of governance characteristics within state agencies, we relied on primary data from a study of wildlife agencies across 29 states gathered in 2018 (n = 10,204). Again, these characteristics represent dimensions of agencies and should be examined as patterns across responses and in contrast across states. Variables included in our study reflected the domination orientation of each agency as measured above, as well as the pressure that employees within each of these agencies felt to conform to these values and associated ideologies[10] with the understanding that even those who hold different values may not always act on them given pressure to conform (Cramer et al., 1993). Additionally, we examined the degree to which agencies engaged in more or less participatory governance arrangements through a modified version of Arnstein's (1969) ladder of participation, which assessed both current and ideal levels of public participation in the aggregate to determine opposition to increased public engagement.[11] We supplemented this data with data on self-described agency priorities that speak to the inclusive or exclusionary nature of governance practices, including the prioritization of science over politics, traditional stakeholders over members of the broader public, and efficiency over legitimacy).[12] Data were analyzed using SPSS v. 25 (Chicago, Illinois).

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[9] Measured on the public survey using a single survey item that prompted respondents to indicate on a scale from 1 (not at all) to 4 (almost always) the extent to which they trusted their state wildlife agency to do what is right for fish and wildlife management in their state. Trust was scaled to the state level as the percent of individuals within a state who expressed trust in their agency "most of the time" or "almost always".

[10] Measured within wildlife agencies across a set of four items of a 1 (strongly disagree) to 5 (strongly agree) scale designed to assess individual pressure to conform (e.g., *It is important to me that I fit in with the culture of this agency*; Chronbach's alpha = .732). Aggregated to the agency level as the percent of individuals within an agency who scored above the sample median (3.75).

[11] Measured as the extent to which employees believed the general public a) was currently and b) would be ideally included in decision-making based on the following response options on a 1 to 7 scale: non-participation, education, consultation, representation, partnership, delegation, and complete control. Support for increased public participation was calculated by subtracting current from ideal levels and recoding into a dichotomous variable to indicate support or opposition (split at 0). We then aggregated to the state level as the percent of employees who indicated support for more public participation.

[12] Measured by asking respondents which of a set of objectives they believed their agency prioritized. Responses for these items were aggregated as the percent of individuals within an agency who believed their agency focused on more technocratic objectives such as science, efficiency, and traditional stakeholders.

Following our case study comparison, we tested an empirical model across our 29 states to determine whether findings were consistent more broadly within our data. We first ran correlations (Pearson's *r*) between a subset of measured concepts within social culture (values, norms, trust) to test for relationships between our variables and then regressed values and norms on trust to ensure that they offered unique explanatory power to our model. Once we were confident that we had an accurate model of social culture, we ran correlations (Pearson's *r*) to determine whether a relationship could be found between state culture and opposition to increased participation and prioritization of science over politics (measures of autocratic governance) through a pathway of trust in state wildlife agencies.

3.2 South Dakota

South Dakota is a mid-western state largely defined by its traditional culture. While the state has, in recent years, begun to see a slow rise in immigration, the character of South Dakota is overwhelmingly White, Christian, and native-born (American Community Survey, 2018) (data comparisons available in Table 4.1). The state is predominantly politically conservative, voting for Republican Donald Trump in

Table 4.1: State and agency cultural variables, New York and South Dakota

State Culture Variables	New York	South Dakota
Percent White[1]	63%	87%
Percent Christian[1]	73%	77%
Percent native-born[1]	77%	96%
Percent with strong domination values[2]	50.0%	71.4%
Tightness Ranking[3]	39	21
Percent who perceive strong social norms[2]	50.3%	64.3%
Percent who prioritize maintaining order in the nation[2]	47.2%	58.3%
Percent who voted for Trump[4]	36.5%	61.5%
Percent trust in state wildlife agency[2]	55.4%	73.1%
Percent who hunted in last 12 months[2]	5.5%	19.7%
Agency Culture Variables		
Percent with strong domination values[5]	85.1%	95.2%
Percent who view their agency as prioritizing science over politics[5]	27.9%	35.6%
Percent feeling strong desire to conform[5]	41.3%	54.8%
Percent support for more public participation[5]	35.5%	31.4%
Percent who view their agency as prioritizing efficiency over legitimacy[5]	31.3%	41.7%
Percent who view their agency as prioritizing stakeholders over public[5]	48.9%	60.1%

[1] American Community Survey (2018)
[2] America's Wildlife Values Survey (2018)
[3] Harrington and Gelfand (2015)
[4] Associated Press (2016)
[5] Wildlife Agency Culture Survey (2018)

the 2016 election by more than 60% (Associate Press, 2016), with similar percentages believing that the government's primary focus in the next decade should be on maintaining social order. The relatively homogenous political make-up of the state reflects its tight culture, defined by well-established social norms with strong social and legal sanctions associated with rule infractions (e.g., Capital Punishment). In line with these ideologies, nearly three-quarters of South Dakotans hold strong domination values towards wildlife and as a result, engage more in traditional forms of wildlife recreation such as hunting. The tight culture and perceptions of shared values within the state have resulted high rates of political trust, with 73% of respondents indicating trust in their state fish and wildlife agency.

In such a tight and relatively homogenous culture, South Dakota's state wildlife agency has evolved to reflect the state's traditional values in its conservation efforts. Within the agency, almost all employees hold strong domination values, and more than half reported feeling strong pressure to conform to agency values and ideologies. The centrality of domination values is further evidenced by the fact that most employees perceive their agency to prioritize traditional stakeholders such as hunters and anglers over other members of the public in decision-making. The agency is also comparatively more focused on the technical dimensions of wildlife management, with a higher percentage of employees indicating that their agency prioritizes science over politics and is more focused on enhancing efficiency than ensuring legitimacy with the public. This was further reflected in open-ended comments from agency employees, who characterized their agency as "traditional" and focused on "hunting opportunity", the "promotion of hunting heritage", and managing with a "my way or the highway outlook" that reinforces the dominant culture of the state.

3.3 New York

In contrast to the homogenous and highly traditional culture of South Dakota, New York is a state known for its diverse population and progressive politics. In 2018, nearly a quarter of the state's population were immigrants, and nearly 40% of individuals in the state identified as people of color (American Community Survey, 2018). The state is much more politically liberal than South Dakota, with the majority of its residents voting Democratic in the 2016 election and only a minority suggesting

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"maintaining order" as a primary goal for government in the coming decade. This level of diversity is also reflected in the looseness of the state's culture, with less than half of residents indicating the presence of strong social norms and clearly defined sanctions. Values are also significantly more diverse in New York than South Dakota, with only 50% of the population holding strong domination values (one of the lowest in the country) and very few individuals, as a result, participating in consumptive activities such as hunting. In such a socially diverse environment, trust is significantly lower than South Dakota, with only around half of the public expressing trust in their state wildlife agency.

Given the diverse cultural context within which New York's state wildlife agency operates, it is unsurprising that the agency is much more engaged in the political dimensions of wildlife conservation than its South Dakota counterpart. While the majority of agency employees still hold strong domination values, employees noted significantly less pressure to conform to agency values and ideologies than in South Dakota. Moreover, employees were equally split on whether the agency prioritizes traditional stakeholders over members of the broader public. Because of the need to address diverse values and perspectives in their state, employees were much more likely than those in South Dakota to suggest that their agency was focused on addressing politics and issues of legitimacy than making decisions solely on the basis of science and efficiency. Again, these perspectives were echoed in open-ended comments from respondents who noted the highly political nature of conservation in their state, proposing for example, that their agency was "committed to incorporating public comments and viewpoints", worked as "keepers of the public trust", and were in some cases, "obsessed with process vs. results".

Findings from these case studies provide preliminary evidence to support our assertation that cultures rooted in domination values are more likely to foster autocratic governance institutions. Given the relatively uniform culture of South Dakota, the focus within the state wildlife agency primarily is largely around reaffirming tradition, heritage, and hunting as the goals of management, with science operating toward these ends. In New York, however, stronger pressure exists for the state wildlife agency to engage in the political dimensions of conservation in an effort to address the diversity of values and perspectives that exist in that state. Do these patterns hold across all 29 states in our sample?

3.4 A Systems Model of Conservation Governance

Based on the outcomes of our case study examples above, we drew out a simplified model to show how technocratic governance arrangements evolve and adapt in response to broader social culture within society (Figure 4.1). Based on the pattern of findings from our case study above and given our
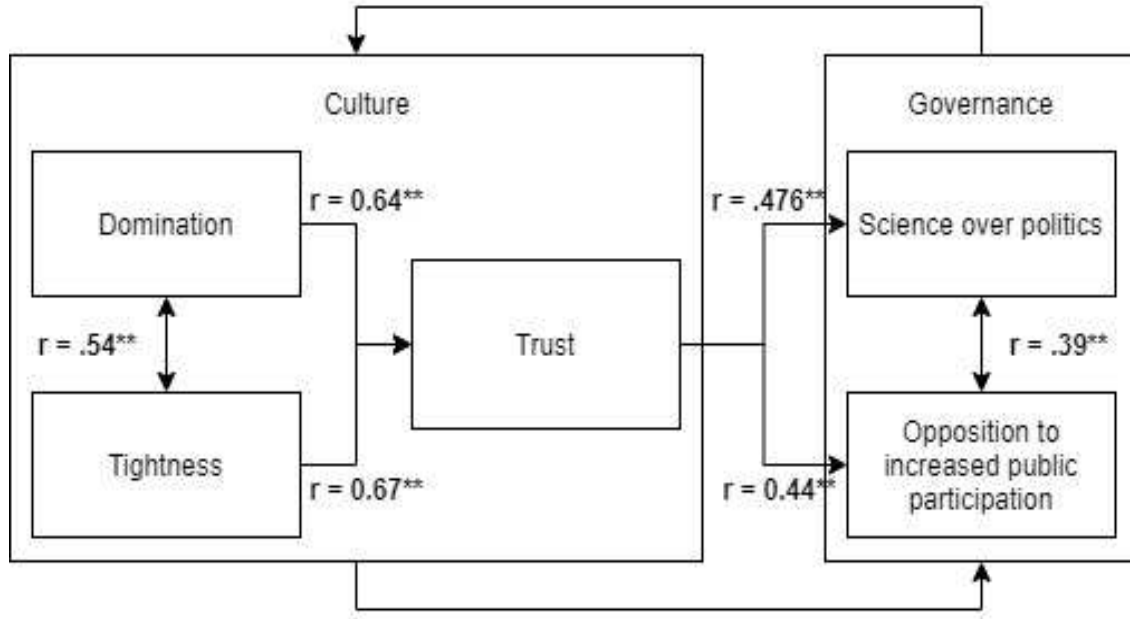

Figure 4.1: Systems model of wildlife conservation governance

limitations around availability of data across these states, we first tested for a relationship between aspects of social culture, findings a moderate, statistically significant relationship between domination values and social norms ($r = .54$, $p = .003$). We then tested for the influence of these variables on political trust, and found that each offered unique variability in explaining the percent of the public within each state who expresses trust in their state wildlife agency ($\beta_{domination} = .39$, $p = .018$; $\beta_{tightness} = .45$, $p = .007$; model $r^2 = .55$). Based on our theory that trust communicates societies' governance preferences to agencies, we next tested for relationships between trust and characteristics associated with less participatory technocratic governance, such as the prioritization of science over politics and opposition to increased public

participation ($r_{\text{science}} = .48$, $p = .009$; $r_{\text{participation}} = .44$, $p = .019$)[13]. Results illustrate how tight cultures rooted in domination are more likely to exhibit high levels of political trust, and moreover, that these high levels of trust appear to lend themselves to models of governance that preference less participatory forms of decision-making.

4. DISCUSSION

Calls for more participatory governance have dominated wildlife conservation in the 21st century and posed a fundamental challenge to the established power structures that place decisions about wildlife squarely into the hands of technocrats. But will this call for change transform wildlife conservation's current governance practices? Our findings provide preliminary evidence to suggest that who gets a say in wildlife decision-making may be an evolutionary response to the broader social contexts within which organizations operate. In particular, findings from our comparative analysis of wildlife conservation in the United States speak to the important role of demographic and ideological diversity, social norms, and political culture in shaping political trust, and as a result, influencing the degree to which agencies are given leeway to make decisions without extensive public input. A systems view of governance is further supported through our pattern of findings across all 29 states, which illustrate moderate to strong relationships between aspects of social and political culture (domination, normative tightness, and trust in government) and the degree to which agencies embrace governance practices that prioritizes science and technical expertise over public input.

A systems approach to examining conservation governance adds to our understanding of how governance models evolve in conservation. But what do these findings mean for practitioners and organizations operating in rapidly changing social contexts? Wildlife agencies in the U.S., for example, have been consumed in recent years with efforts to remain "relevant" amid cultural change that is driving declines in traditional forms of recreation and widening the gap between agencies and the publics they

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[13] While trust did not fully mediate the relationships between our cultural variables and governance characteristics, we believe these findings to be in line with a systems understanding of culture wherein values, norms, and attitudes are iterative rather than linear.

serve. These efforts, which seek to engage the broader public more directly in conservation, recreation, and decision-making (see AFWA & The Wildlife Management Institute, 2019) mark a significant departure from current approaches, which preference a domination approach to wildlife conservation and maintain technocratic power structures to enact these values on the landscape. While attempts to guide intentional change toward more participatory paradigms have renewed discussions about the social dimensions of wildlife conservation (Decker et al., 2016; Serfass et al., 2018; Manfredo et al., 2019), our findings suggest that radical transformation in these spaces is unlikely. Rather than conscious political choices, governance models appear to evolve and be sustained largely in response to their social context. Established institutions are then continually reinforced by pressure from those both inside and outside of organizations who benefit from the status quo (Jost et al., 2004).

As a result of the myriad pressures that organizations face to engage in specific behaviors as a result of their social contexts, change within these organizations is often convergent and serves to reinforce and strengthen preexisting practices. For example, evidence from a 10-year study of literature on "system justification" shows that in the face of extreme threats, individuals and organizations tend to cling to previously dominant ideologies, norms, and practices as a means of self-preservation (Staw et al., 1981; Jost et al., 2004). Given these constraints, efforts to expand decision-making through top-down processes are likely to face significant pushback and result in only subsurface changes in cultural contexts that are not attuned to a participatory political culture. To date, participatory reform in conservation has largely relied on these formal institutions of democracy to bring about change. National policies in the U.S. such as the Administrative Procedure Act and the National Environmental Policy Act have extended opportunities for public input and government transparency but have failed to create a substantive platform for citizens to engage in policy processes beyond an airing of (often ignored) grievances (Nie, 2004a; Sullivan, 2019). According to Almond and Verba (1964, p. 5):

> *"If the democratic model of the participatory state is to develop… it will require more than the formal institutions of democracy – universal suffrage, the political party, the elective legislature. These in fact are also part of the totalitarian participation patterns, in a formal if not functional sense. A democratic form of participatory political system requires as well as a political culture consistent with it."*

Expanding public access to non-meaningful forms of participation, while democratic in a formal sense, does little to shift the culture of political decisions-making within conservation that prioritizes some voices while excluding others.

This understanding is particularly important in contemporary wildlife management, because while we may be able to assess when agencies are more or less likely to engage in political discussions, findings presented in Table 4.1 illustrate a narrow range of variability in governing styles. As institutions and historical paradigms (Chapter 2), as well as an internal culture of antipolitical attitudes (Chapter 3) reinforce the prominence of expert-knows-best models for conservation, it largely falls to those outside agencies to push for these changes. But asserting that social culture influences conservation governance does not let these organizations off the hook for engaging broader audiences in their decision-making processes. Given the astronomical stakes of biodiversity conservation in the coming years, conservation practioners are being thrust into the political arena, whether they want to be or not. Technocracy may have built a portfolio of conservation successes, but the decisions that underlie these stories are also deeply political, each with a unique and often predictable set of winners and losers. Fortress conservation strategies like those built into REDD+ that once represented the gold standard of global wildlife conservation efforts have drawn out the deep environmental scars left by colonialism and modern power struggles by indigenous activisms for land tenure rights (Garland, 2008; Cabello et al., 2012). Continued debate over the reintroduction and/or delisting of wildlife species like wolves and bears in the American West likewise illustrate the powerful influence of special interest groups over wildlife agencies, who offer their overwhelming support for expert decision-making only so long as the decisions being made are in line with their political interests (Nie, 2003b). In the context of such complex social processes, sustainable solutions to our most intractable conservation problems does not require more biology or physics; they requires more integration with social sciences that can help us understand the roots of (and possibly even remedy) power imbalances and conflicting values and suggest pathways toward sustainable conservation in their wake (Bennet et al., 2017; Manfredo et al., 2019). How agencies engage with these dimensions will define whether they remain relevant in the years and decades to come.

Systems theory represents an emerging way of thinking about how society, culture, and politics interact to influence daily practices and paradigms. While our model adds significantly to existing theories on the link between culture and governance both in conservation and beyond, it would benefit from further validation to determine if these relationships are evident in other social contexts. Further research is needed, for example, to address how assumptions of neutrality in technocratic governance may mask public demand for alternative conservation visions even within homogenous cultures and how change manifests in these systems overtime. Additionally, our study emerged out of a broad effort to understand wildlife values in the U.S., meaning that our variables represent imperfect measures of complex cultural concepts that may not offer the same descriptive potential in alternative conservation contexts. Future efforts to understand the social roots of conservation governance should expand on these measures moving forward.

Given our deep uncertainty about the future of this planet, it is more important than ever before to envision conservation that is both socially and ecologically sustainable. While technocratic governance has indeed offered great utility for solving specific conservation challenges in the past, it has in many contexts failed to address – often intentionally ignored – the social and political dimensions that lie at the heart of our current challenges. Recognizing the intimate linkages between culture, science, and politics is one step toward a more nuanced approach to engaging in conservation that meets the needs of both human and more-than-human communities on a shared planet.

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Insert Logo

Better understanding the culture of our agency

Dear Agency Employee,

Your state fish and wildlife agency, in partnership with Colorado State University (CSU), and the Association of Fish & Wildlife Agencies is conducting a survey to better understand the inner-workings of our agency from the perspective of its valued workforce.

This survey focuses on understanding culture, adaptability, and approaches to governance within your agency and others across the United States. This survey is an extension of a Wildlife Values Study that is currently being conducted nationally to better understand public values towards fish and wildlife.

Your participation in this survey effort is voluntary, but we encourage you to take part so that we can obtain a thorough understanding of your agency and fish and wildlife agency workforces across the country. Any responses you provide will remain completely confidential. The survey should take no more than 15-20 minutes of your time.

If you have any questions at all about the study, please contact **Leeann Sullivan, Research Assistant** by email at leeann.sullivan@colostate.edu or by phone at (970) 491-5937. You can also click here for an FAQ containing more detailed information about this survey.

Thank you in advance for taking part in this important research!

Sincerely,

Michael M

Director
Fish and Wildlife Agency

Dr. Michael Manfredo
Principle Investigator
Colorado State University

J. 2.2

Dr. Tara Teel
Principle Investigator
Colorado State University

Leann Sullen

Leeann Sullivan
Research Assistant
Colorado State University

In accordance with federal regulations, the Colorado State University Institutional Review Board (IRB) has reviewed and approved this study. No identifying information will be connected to your responses. There are no known risks or direct personal benefits associated with participation in this study. If you have questions about your rights as a participant in this research, you may contact the IRB Administrator at (970) 491-1553 or by email at RICRO_IRB@mail.colostate.edu.

CSU # 049-17H
APPROVED: 1/04/2018

In this survey, we are interested in your perceptions of your fish and wildlife agency in its entirety. Please keep that in mind when responding.

1. Below is a list of phrases that may or may not describe your agency. We want to know how well you think each of these phrases characterizes your agency. Please indicate the extent to which you believe each phrase is uncharacteristic or characteristic of your agency by selecting one response for each.

	Very uncharacteristic of my agency	Somewhat uncharacteristic of my agency	Neither	Somewhat characteristic of my agency	Very characteristic of my agency
Experts in natural resource management	○	○	○	○	○
Enforcers of relevant natural resource law	○	○	○	○	○
Innovative in its approach to management	○	○	○	○	○
Adaptable in the face of change	○	○	○	○	○
Focused on promoting stewardship	○	○	○	○	○
Compassionate towards fish and wildlife	○	○	○	○	○
Willing to take risks	○	○	○	○	○
Forward-looking	○	○	○	○	○
Accountable for its actions	○	○	○	○	○
Transparent and open	○	○	○	○	○
Tolerant of different viewpoints	○	○	○	○	○
Equitable in its approach to management	○	○	○	○	○
Focused on fair process	○	○	○	○	○
Stands for integrity	○	○	○	○	○
Takes advantage of new opportunities	○	○	○	○	○
Protectors of the state's natural resources	○	○	○	○	○

2. We recognize that the list of phrases above may not have represented all your views about the characteristics of your agency. Please use the box below to provide us with any additional words or phrases that you believe are "very characteristic" of your agency.

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3. Managers are often forced to choose between competing demands for fish and wildlife management. We are interested in knowing, in general, how you view the priorities of your agency. Assuming a <u>hypothetical situation in which only one management option was possible</u>, we want to know how you believe your agency would prioritize different goals and objectives. Please respond to the following series of questions by picking one of the two response options for each comparison.

If forced to choose, my agency would place greater priority on....

Protecting wildlife habitat	O	O	Providing recreational opportunities
Meeting the needs of resources we manage	O	O	Meeting the needs of the public
Protecting endangered species	O	O	Protecting game species
Long-term planning	O	O	Day-to-day management
Efficiency	O	O	Legitimacy
Carnivores	O	O	Ungulates
Hunter recruitment and retention	O	O	Reaching a diversity of interests
Process	O	O	Outcome
Doing what is best	O	O	Doing what is fair
Tradition	O	O	Innovation
The present	O	O	The future
Science	O	O	Politics
Remaining true to our roots	O	O	Adapting to changing social conditions
Educating the public on what is right	O	O	Listening to public concern
Traditional stakeholders	O	O	All members of the public
Being Proactive	O	O	Being Reactive

4. We want to know about the ways in which you personally identify with your agency. Please indicate the extent to which you disagree or agree with the following statements by selecting one response for each.

	Strongly Disagree	Slightly Disagree	Neither	Slightly Agree	Strongly Agree
I usually agree with how my agency prioritizes goals and objectives.	O	O	O	O	O
With regard to the management of fish and wildlife, I believe my agency shares similar values to me.	O	O	O	O	O
I believe my agency should focus more on adapting to change.	O	O	O	O	O
In this agency, if someone acts in an inappropriate way, others will strongly disapprove.	O	O	O	O	O
I believe my agency should focus more on being transparent and accountable to the general public.	O	O	O	O	O
My employment at this agency is central to how I identify myself as a person.	O	O	O	O	O
It is important to me that I fit in with the culture of my agency.	O	O	O	O	O
I would like to be seen as a model agency employee.	O	O	O	O	O
In this agency, there are clear expectations for how people should act in most situations.	O	O	O	O	O
I feel a personal commitment to uphold the values of my agency.	O	O	O	O	O
My agency provides adequate opportunities for employees to play a role in decision-making.	O	O	O	O	O
People agree upon what behaviors are appropriate or inappropriate in most situations in this agency.	O	O	O	O	O
The views of the public in my state are changing with regard to wildlife management.	O	O	O	O	O

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Public participation in decision-making has been conceptualized by researchers as a "ladder" with the bottom rungs representing minimal public involvement and the upper rungs representing significant opportunities for the public to shape decision-making, as described below.

7 — Complete Control — Holds complete control over decision-making

6 — Delegation — Holds the majority of control over decision-making

5 — Partnership — Holds equal control with agencies over decision-making

4 — Representation — Has symbolic involvement which can influence policy

3 — Consultation — Is asked for input which is used at the discretion of agencies

2 — Education — Is informed of policy decisions once they are made by agencies

1 — Non-participation — Is not included in decision-making

5. Please indicate your answer to each of the following questions using the numbers listed next to each "rung" on the ladder above.

At what level do you believe your agency currently includes the general public in decision-making?	
At what level do you believe your agency currently includes paying stakeholders in decision-making?	
At what level do you believe your agency should include the general public in decision-making?	
At what level do you believe your agency should include paying stakeholders in decision-making?	

6. Below are statements that represent a variety of ways people feel about fish and wildlife. Please indicate the extent to which you disagree or agree by *selecting one answer for each statement.*

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
Humans should manage fish and wildlife populations so that humans benefit.	○	○	○	○	○	○	○
Animals should have rights similar to the rights of humans.	○	○	○	○	○	○	○
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	○	○	○	○	○	○	○
I view all living things as part of one big family.	○	○	○	○	○	○	○
I believe that wildlife have free-will.	○	○	○	○	○	○	○
Hunting does not respect the lives of animals.	○	○	○	○	○	○	○
I feel a strong emotional bond with animals.	○	○	○	○	○	○	○
I believe that wildlife have consciousness.	○	○	○	○	○	○	○
The needs of humans should take priority over fish and wildlife protection.	○	○	○	○	○	○	○
I care about animals as much as I do other people.	○	○	○	○	○	○	○
Fish and wildlife are on earth primarily for people to use.	○	○	○	○	○	○	○
I take great comfort in the relationships I have with animals.	○	○	○	○	○	○	○
I believe that wildlife have intentions.	○	○	○	○	○	○	○
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	○	○	○	○	○	○	○
We should strive for a world where humans and fish and wildlife can live side by side without fear.	○	○	○	○	○	○	○
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	○	○	○	○	○	○	○
I value the sense of companionship I receive from animals.	○	○	○	○	○	○	○
People who want to hunt should be provided the opportunity to do so.	○	○	○	○	○	○	○
Wildlife are like my family and I want to protect them.	○	○	○	○	○	○	○
I believe that wildlife have minds of their own.	○	○	○	○	○	○	○
It is acceptable for people to use fish and wildlife in research even if it may harm or kill some animals.	○	○	○	○	○	○	○
It would be more rewarding for me to help animals rather than people.	○	○	○	○	○	○	○
Hunting is cruel and inhumane to the animals.	○	○	○	○	○	○	○
I believe that wildlife appear to experience emotions.	○	○	○	○	○	○	○

7. Research suggests that while some people in the conservation profession feel optimistic about the future of biodiversity, others may feel pessimistic. How would you describe your own views on the future of global biodiversity?

Very Pessimistic	Moderately Pessimistic	Slightly Pessimistic	Neither	Slightly Optimistic	Moderately Optimistic	Very Optimistic
○	○	○	○	○	○	○

The following background information will be used to help make general conclusions about employees across state fish and wildlife agencies in the United States. Your responses will remain completely confidential.

1. We would like to learn about your <u>non-work-related</u> fish and wildlife activities. Please *select one* option for each question below.

	Yes	No
Have you ever participated in recreational fishing?	O	O
Did you participate in recreational fishing in the past 12 months?	O	O
Have you ever participated in recreational hunting?	O	O
Did you participate in recreational hunting in the past 12 months?	O	O
Have you ever taken a recreational trip for which fish or wildlife viewing was the primary purpose of the trip?	O	O
Did you take any recreational trips in the past 12 months for which fish or wildlife viewing was the primary purpose of the trip?	O	O

2. **Do you work in a regional/field office or in your agency's headquarters?** (*Select one*).

   O Regional Office   O Headquarters

3. **How would you identify the division in which you work?** (*Select one*).
   - O Fisheries
   - O Wildlife
   - O Parks/Lands
   - O Communication/Outreach/Education
   - O Enforcement
   - O Administration/Support
   - O Human Dimensions/Responsive Management Unit
   - O Policy/Planning
   - O Other: _____

4. **How many years have you worked for your agency in total?** _____ *(years of service)*

5. **How many years have you worked in your current position?** _____ *(years of service)*

6. **Do you identify as....?** (*Select one*).
   - O Male
   - O Female
   - O Prefer to self-describe as _____
   - O Prefer not to answer

7. **What year were you born?** _____

8. **What is the highest level of education you have completed?** (*Select one*).
   - O Less than high school
   - O High school diploma or equivalent (e.g., GED)
   - O 2-year associate's degree or trade school
   - O 4-year college degree
   - O Advanced degree beyond 4-year college degree

9. **Are you...?** (*Select one or more categories.*)
   - ☐ White
   - ☐ Black or African American
   - ☐ Hispanic or Latino
   - ☐ American Indian or Alaska Native
   - ☐ Asian
   - ☐ Native Hawaiian or Other Pacific Islander
   - ☐ Other *(please specify)*: _____

10. **While many people in the United States would view themselves as "Americans", we are interested in finding out more about how you would define your ethnic background. What is the primary ethnic origin with which you identify (e.g., Italian, Jamaican, Norwegian, Dominican, Korean, Mexican, Taiwanese, Ukrainian, and so on)? (Please write your ethnic origin.)** _____

11. **If your ancestors immigrated to the United States, about how many generations ago did they come here?** (*Select one.*)
    - O I came here from another country
    - O My parents came here from another country
    - O My grandparents came here from another country
    - O My great-grandparents came here from another country
    - O My ancestors came here more than 3 generations ago
    - O I'm not sure how long ago my ancestors came here