

[Re]animating Predator Conservation:  
Linking Perspectives on the Reintroduction of the Mexican gray wolf  
(*Canis lupus baileyi*)

by

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## ABSTRACT

Human and wildlife behavior, governance, and economics are often cited obstacles to wildlife conservation. Accordingly, conservation research has historically been conducted in the exterior terrains of behavior and systems, which can be empirically observed or known through systemic analysis and applied through institutional or technical fixes. However, conservation interventions are failing because they do not adequately address the influence of individual and collective interior phenomena including psychological states, worldviews, values, and identities of stakeholders, which can bear decisively on conservation outcomes.

This critical analysis of wildlife conservation science and the social and political histories of Southwestern landscapes illustrates the mechanism of social, cultural, and media narrative linking four irreducible perspectives of the natural world: the I, WE, IT and ITS, or the psychological, cultural, behavioral and structural/systemic terrains, which ground contemporary conservation. Through the conceptual [Re]animation of conservation, this research justifies a more-than-human approach to wildlife conservation that resists the ontological privilege of the human and contemplates human and non-human animals as vitally linked in their mutually relational, perceptual and material environments. The approach extends the human to the natural environment and also accounts for the individual and social needs and perspectives of wild animals, which shape their adaptation to changing environments and conservation interventions.

A qualitative analysis of emotion, metaphor, and narrative utilizing an Integral Ecology framework explores how psychological and cultural terrains link to, and influence, the behavioral and systemic terrains of Mexican gray wolf (*Canis lupus*

*baileyi*) conservation in the U.S. Southwest. This research disentangles and comprehensively maps influential elements in the four terrains; enhancing relational knowledge on human-predator coexistence and conservation governance in the Southwest.

DEDICATION

To Lulu Rose  
for being

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## NOMENCLATURE

AZGFD	Arizona Game and Fish Department
AQAL	All Quadrants All Levels (Integral Ecology)
BLM	United States Bureau of Land Management
BRWRA	Blue Range Wolf Recovery Area
CITES	United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora
DOD	United States Department of Defense
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESPA	Endangered Species Protection Act
IE	Integral Ecology
MWEPA	Mexican Wolf Experimental Population Area
NEPA	National Environmental Policy Act
NMGFD	New Mexico Game and Fish Department
NPS	United States National Park Service
SSP	Species Survival Plan
UNESCO	United Nations Educational, Scientific and Cultural Organization
USBR	United States Bureau of Reclamation
USFS	United States Forest Service
FWS	United States Fish and Wildlife Service

# CHAPTER 1

## INTRODUCTION

### 1.1 Overview

In the West, humans and wild animals are broadly perceived as belonging in separate domains; humans in the civilized world and wild animals in the wilderness. As human populations expand, urban development and infrastructure increasingly encroach on wilderness, reducing and fragmenting wildlife habitat. Wildlife perceive and adjust to rapid human-induced environmental changes in different ways, some not welcomed by people. Wildlife move through developed areas to range or migrate and to find food, mates, or shelter. Most wild animals will avoid humans if given the opportunity, but some will forage, scavenge, and hunt in human occupied areas, which can entail digging in human trash, killing pets, trampling gardens, and sometimes attacking people. Wildlife crossing through human settled areas are often regarded as trespass animals or pests (Philo and Wilbert 2000) or perceived with exaggerated fears, especially in the case of predators. These fears have been cultivated by narrative over hundreds of years.

Large predators have been exterminated because they present physical or livelihood threats to humans. Widescale, government-sponsored predator elimination programs have resulted in species declines and extinctions worldwide. It is now acknowledged that predators have important ecological roles, and that without predators, natural environments fail to function well; and poorly functioning ecosystems do not provide the provisioning, regulating, and supporting ecoservices needed to sustain human and other life. Additionally, as global biodiversity has decreased, wild animals have

become rarer, and their charismatic appeal has increased. This appeal has been contextualized as a cultural ecoservice.

In response to massive species and ecosystem declines, predators are being reintroduced into today's wilderness landscapes. Conservation interventions are chiefly guided by science and thus focus on the biological or systemic aspects of conservation. For example, interventions designed to support reintroduced species include captive breeding, in vitro fertilization, supplemental feeding, and intervention in raising young. Structural interventions include protective legislation, funding, and wildlife management programs and policies.

In the behavioral realm human-wildlife conflict can arise related to livelihood practices, livestock depredation and direct human-wildlife interaction (Woodroffe, Thirgood and Rabinowitz 2005). Systemic conflict can arise from interagency or institutional misalignment, and economic forces, for example. However, human-wildlife conflict is also influenced by psychological and cultural perspectives, and these domains have not historically been integrated into conservation planning, implementation, or conflict management strategies. Response to human-wildlife conflict is typically also in the behavior and systemic domains and includes such actions as predator translocation, predator killing, and compensation for depredation.

Economic and livelihood interests, social positionalities, competing institutions (rules and norms), political cultures, power structures, worldviews, and values materially define the human-predator cultural and geographic landscapes, and can be incongruous at different scales. Predator introductions take place in vast public domain wildernesses. Reintroductions are often supported on national and global scales, but rural or

wilderness-adjacent communities are often resistant to reintroduction due to perceived threats of predators. Predator intolerance is related to direct or proxemic experience with wildlife, which is increasing due to habitat encroachment and fragmentation. Conflicts over use and management of lands that wildlife inhabit are inherent in *in situ* wildlife conservation interventions, and these conflicts have become increasingly complex, as variables of conflict are manifold (Prukop and Regan 2005). Anti-predator sentiment can be simultaneously motivated by social and political factors (Goldman, Roque De Pinho and Perry 2013), human fears, and value-informed ideologies about wildlife and conservation (Emel 1998; Gullo, Lassiter and Wolch 1998; Boomgaard 2001; Manfredi, Teel and Bright 2003; Coleman 2004).

Research shows that environmental attitudes are strongly associated with large-scale cultural differences (Gangass, Kaltenborn and Andreassen 2015). Attitudes toward wildlife, the natural environment, and wildlife management policies, as well as toward organizations or agencies leading conservation efforts, are consistently cited as a determining factor in the successful design, implementation, and long-term efficacy of wildlife conservation projects, programs and initiatives (Brown 2002 org. 1983; Fritts et al. 2003; Holaday 2003; Musiani et al. 2004; Prukop and Regan 2005; Robinson 2005; Woodroffe et al. 2005; Beumer and Martens 2013).

## 1.2 Worldviews, Values, Attitudes, and Behaviors

Culturally-bound values are an outgrowth of worldviews which are formed in an individual's earliest years by social and cultural narrative, both explicit and tacit. Manifested in our worldviews, these narratives become part of who we are, and how we

understand our place and the place of other life in the world. As worldviews inform values, values form attitudes, and attitudes lead to behaviors. Manfredo and Teel (2009) found that individual wildlife values in the American West are informed by opposing ideologies of domination and mutualism, which lead to different attitudes toward wildlife (Manfredo, Teel and Henry 2009); the former exploitive to nature and wildlife, and the latter conducive to conservation (Teel, Manfredo and Bright 2005).

Many have argued that a societal scale shift in environmental values is needed for successful conservation (White 1967; Leopold 1970 org. 1949; Merchant 1989; Wright 1992; Shepard 1995; Wilson 1996; Ehrlich and Kennedy 2005; Bekoff 2010; Schultz 2011). However, values are foundational and culture-bound. Thus, they remain stable over long periods (Homer and Kahle 1988). Manfredo et al. (2016) conclude that orchestrated efforts to force a value shift favoring conservation are unlikely to be successful due to the foundational and evolutionary nature of values (Manfredo et al. 2016a).

One way to influence value shift (albeit a slow shift) toward mutualism is to craft new narratives that reconnect humans to nature and wildlife concurrent with dismantling old narratives that separate humans from nature and non-human animals. Dualistic narratives that separate and privilege the human are deeply embedded in Western culture and institutionalized into social structures, including conservation science. Science has high knowledge validity in the West, so modifying science narrative can influence value change over time.

Pierre Bourdieu (1977) proposed that individuals embody their lived worlds as they acquire dispositions and tendencies from social experience and personal history. A

system of social rules and norms (which Bourdieu terms a *habitus*) influences how individuals and groups perceive and respond to the world around them. A habitus embodies tacit knowledge (i.e. worldviews and values) that influence sense of belonging in a group or a place (Bourdieu 1977). However, the process of individual and social meaning-making is not linear, but iterative. While values shape individual attitudes, and by extension behaviors; behaviors through affecting the material and social world, can also shape attitudes and influence value change over time. Modifications to conservation science methodologies and practices can influence a value shift by changing the environment, and by extension, the lived experience.

### 1.3 Research Focus

Competing beliefs, worldviews, and values are drivers of conflict in wildlife conservation, as they influence attitudes, ideologies, and behaviors, which can determine conservation success or failure. Successful predator conservation therefore involves much more than applying the best science for the best biological and ecological outcomes. Manfredo et al. (2016) make an explicit call for integrated values research that can inform conservation strategies (Manfredo et al. 2016a), and the aim of this dissertation is to contribute to that body of knowledge.

The purpose of this research is to identify psychological, cultural, behavioral and structural drivers in wildlife conservation conflict, and to illustrate the links and mutual dependencies in these four domains (or perspectives). I present a case study that analyzes conflict over reintroduction of endangered Mexican gray wolves onto rural-adjacent

public lands in Arizona and New Mexico following the species' thirty-year absence from the landscape. I address the following research questions:

#### 1.4 Research Questions

In Mexican wolf conservation:

1. What are the beliefs and attitudes (psychological perspectives) of stakeholders?
2. What worldviews and values characterize the cultures of stakeholders?
3. What materialities and behaviors are chief conflict factors?
4. What are the dominant power structures?
5. What are the narrative links between psychological, cultural, behavioral, and structural factors complicating Mexican wolf recovery?

#### 1.5 Mexican Wolf Reintroduction Background

Genetically, morphologically, and ecologically differentiated, the Mexican wolf (*Canis lupus baileyi*), also regionally called *el lobo*, (hereafter referred to as Mexican wolf) is the smallest, rarest and most genetically distinct subspecies of gray wolf (FWS 2017b; Heffelfinger, Nowak and Paetkau 2017). The world's southernmost ranging wolf, the Mexican wolf historically ranged throughout the U.S. Southwest, but the better part of its territory was in Mexico (FWS 2017b) (Figure 1.1).<sup>1</sup> When ranches were established on the wildlands of Arizona and New Mexico in the mid-19<sup>th</sup> century, Mexican wolves

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<sup>1</sup> Recent molecular analyses suggest Mexican wolf range may have been as far west as California and as far north as Nebraska and Utah, but FWS currently utilizes the more conservative historical range approximation described above. Heffelfinger, J. R., R. M. Nowak & D. Paetkau. 2017. Clarifying the historical range to aid recovery of the Mexican wolf. *Journal of Wildlife Management*, 81, 766-777.



began to prey on livestock. By the early 1900s, overhunting of ungulates (hooved animals such as deer, elk, and bison) by humans had reduced wild prey for Mexican wolves, and with cattle stocking rates high, wolf depredation on livestock intensified (FWS 2009).

Wolves were broadly perceived as vermin and were hunted and killed in large numbers. In support of the ranching industry, aggressive government-sponsored eradication programs beginning in 1915 dramatically reduced the Mexican wolf population by 1920, and successfully eradicated Mexican wolves from the U.S. by 1970.

Gray wolves received protection with the enactment of the ESA in 1973, which specifically granted protections against unregulated killing and mandated wolf recovery efforts (Brown 2002 org. 1983). These protections and recovery efforts led to an increase in scientific research, wildlife reintroduction programs, wildlife management programs, and environmental education programs about wolves in many parts of the country (Brown 2002 org. 1983).<sup>2</sup>



Figure 1.1. The Historic range of the Mexican wolf. (Parsons 1996)

In 1977, pursuant to a mandate by the Endangered Species Act of 1973 (ESA), U.S. Fish and Wildlife Service (FWS) initiated a binational effort with Mexico to recover and reintroduce Mexican wolves. Mexican wolves were bred in captivity, and the first wolves were released into Arizona and New Mexico wildlands in 1998 (FWS 2017a).<sup>34</sup> A formal recovery plan for Mexican wolves was drafted in 1982 (FWS 2017e).<sup>5</sup> International wolf experts rate Mexican wolf recovery as the highest priority gray wolf recovery program in the world (FWS 2009), but reintroduction of wolves into the

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<sup>2</sup> The Endangered Species Preservation Act of 1966 (ESPA) listed endangered native U.S. animal species including the Timber Wolf (*Canis lupus lycaon*), a subspecies of gray wolf. The ESPA was amended to become the ESA of 1969, which protected even non-native endangered species. This amendment led to formation of the United Nations Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) in 1973 (entered into force in 1975). That prompted enactment of the ESA of 1973, which superseded the previous acts. Species listed on the ESPA were transferred to the ESA (though 6 species, including the jaguar were inadvertently left off, and subsequent delays in relisting have created conservation complications for those species, and more generally this oversight has affected stakeholder trust in FWS and aggravated tensions between the Agency and conservation organizations). The specific listing for Timber Wolf was taken off, but it was included as endangered at the gray wolf (*Canis lupus*) species level, as was the Mexican wolf. Several amendments have since been made to the ESA. FWS. 2011. A history of the Endangered Species Act of 1973. ed. U.S. Fish and Wildlife Service Department of the Interior. Washington, DC: Federal Register. Udall, S. L. 1967. Native fish and wildlife: Endangered species. ed. U.S. Fish and Wildlife Service Department of the Interior, 4001. Washington, DC: Federal Register.

<sup>3</sup> The ESA is enforced in the by U.S. Fish and Wildlife service (FWS) and the U.S. National Oceanic and Atmospheric Administration Fisheries Service (NOAA) on land and marine waters respectively.

<sup>4</sup> Mexican wolves were introduced into a 9,500-square-mile area within the historic Mexican wolf range, known as the Blue Range Wolf Recovery Area (BRWRA). FWS. 2017c. Mexican wolf recovery plan: First revision. Albuquerque, NM: Department of the Interior. U.S. Fish and Wildlife Service. Southwest Region (Region 2).

<sup>5</sup> In 1982 the stated reintroduction objectives were to establish a captive population of 240 animals with at least 17 breeding pairs and to reestablish a wild population of at least 100 animals within the Mexican wolf's historic range. Ibid.

Southwest, like other predator conservation efforts, has been a highly contentious issue complicated by myriad factors.<sup>6</sup>

Though by the early 1970s Mexican wolves were extinct in the U.S., small numbers of Mexican wolves persisted in Mexico (FWS 2017b).<sup>7</sup> In 1977 FWS (in cooperation with Mexican conservation authorities) commissioned a survey of numbers and locations of wolves in Mexico (Brown 2002 org. 1983). Wolf killers were experts at finding wolves. Ironically, it was veteran wolf hunter Roy T. McBride whom FWS commissioned to locate and capture alive, the last remaining wild Mexican wolves (Brown 2002 org. 1983).<sup>8</sup> McBride located small populations of wolves in Durango and Chihuahua, Mexico (Brown 2002 org. 1983). Between 1977 and 1980 McBride captured five live wolves (4 males and 1 pregnant female) (FWS 2017b) and turned them over to FWS. These wolves were bred in captivity with a goal of eventual reintroduction, and they form the foundational lineage of the wolves now existing in the wilds of Arizona, New Mexico, and Mexico (FWS 2017b).<sup>9</sup>

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<sup>6</sup> Essentially all wolves, with exception to the Red wolf (*Canis rufus*) are gray wolves (*Canis Lupus*) or gray wolf subspecies (they are not all actually gray, as in the white Artic wolf). There are several gray wolf subspecies in Eurasia and North America that have disputed classifications. These classifications critically influence wolf conservation because institutional protections are specific to species or subspecies.

<sup>7</sup> Wolf eradication campaigns in Mexico also contributed to the demise of the wolf, though because there is little Mexican public land in the historic wolf range, wolf extermination was largely carried out by individual ranchers. Global Rangelands. 2018. Mexican gray wolves in Mexico. <https://globalrangelands.org/topics/uses-range-and-pasture-lands/mexican-gray-wolves-mexico>. (accessed 19 March 2019).

<sup>8</sup> McBride, a successful lion hunter, was also commissioned by World Wildlife Fund to track Florida panthers (*Puma concolor coryi*) in an effort to aid their recovery. O'Connor, M. R. 2015. *Resurrection Science: Conservation, De-Extinction and the Precarious Future of Wild Things*. New York: St. Martin's Press.

In 1998, eleven numbered and collared captive-bred Mexican wolves were released into a protected area established as The Blue Range Wolf Recovery Area (BRWRA), which includes the Apache-Sitgreaves and Gila National forests (in Arizona and New Mexico) (7000 square miles) and 2500 square miles of reservation lands (FWS 2009) (Figure 1.2).<sup>10</sup> The region comprises the largest wilderness area in the Southwest. Though the BRWRA was designated on the periphery of the historic range for Mexican wolves, FWS determined the area would have the greatest potential for reintroduction success due to its size, health, and remoteness (FWS 2017b).

However, the wildlands that Mexican wolves were reintroduced into have long supported small ranching communities, and at the time of their 1998 reintroduction, Mexican wolves had been missing from the landscape for more than thirty years.<sup>11</sup> Ranchers had become accustomed to the absence of wolves and their associated threats. Reintroduction of Mexican wolves represented a federal “about face” to ranchers, given

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<sup>9</sup> The female and two of the males captured by McBride formed the foundation for the captive breeding program. That lineage (known as the McBride lineage) had grown to a population of 107 by 1995. In 1995, two additional lineages were approved for the captive breeding program. These additional lineages stem from two Mexican wolves that had been taken from the wild in 1959 and 1961 (known as the Ghost Ranch lineage), and two Mexican wolves that had been held in captivity since the 1960s in Mexico City’s Chapultepec Zoo (known as the Aragon lineage). Genetic assessments confirmed founders from all three lines were pure *Canis lupus baileyi*. FWS. 2009. Mexican gray wolf husbandry manual: Guidelines for captive management. Washington, D.C.: Department of the Interior, U.S. Fish and Wildlife Service.

<sup>10</sup> The BRWRA has designated boundaries, but the boundaries are not materially defined (as for example, with fences). Wolves were released into the BRWRA from Arizona only (the primary recovery zone), and then dispersed into New Mexico (the secondary recovery zone), as was projected by the recovery effort. The reintroduction effort has required cooperation of state and federal agencies and area tribes including the White Mountain Apache and San Carlos Apache. ---. 2017c. Mexican wolf recovery plan: First revision. Albuquerque, NM: Department of the Interior. U.S. Fish and Wildlife Service. Southwest Region (Region 2).

<sup>11</sup> Private ranching has always been allowed on public lands including national forests, and many wilderness areas, and ranching existed in the Gila wilderness prior to its wilderness designation. The ranching industry, as well as mining, railroad and timber industries, was politically powerful during the era in which many U.S. lands were being set aside for conservation. Protective designations were contingent on allowing extant resource extraction activities in national forests and wilderness areas.

that it was a federal agency that sponsored eradication of wolves to protect interests of ranchers and farmers in the same region over the previous century (Brown 2002 org. 1983; FWS 2017b). Mexican wolves were reintroduced into contested lands, and conflict over the recovery area has delayed or derailed the recovery effort multiple times.

Media have portrayed Mexican wolf conservation as a polarized conflict between ranchers and conservationists, typically focusing on viewpoints and statements made by the most vocal proponents on opposing sides. However, Mexican wolf conservation is not a polar conflict. It is burdened by a matrix of industry-specific agendas, miscommunication and misunderstanding of science, history that has bred anti-government, anti-predator, anti-conservationist and anti-rancher sentiment, and the collective and individual actions of diverse stakeholders and stakeholder groups, including Mexican wolves.

Conservation on public lands in the Southwest is complicated by a mix of political, economic, institutional, cultural, psychological, and historic factors (Sheridan 2001; Keiter 2003; Curtin 2005; Sundberg 2011), which manifest differently at local, regional, and national levels. National support of Mexican wolf reintroduction on public lands has contrasted with local resistance to wolves in areas still populated by ranching communities. Arguments for reintroduction of Mexican wolves center around preservation of wolves as symbolic, the function of wolves as ecosystem regulators, and the imperative to protect an endangered and long persecuted species. These arguments are focused at broad scales of national culture, sustainability, and ethics, with consideration for the long-term benefits of Mexican wolf conservation. Arguments against reintroduction of Mexican wolves center on concern over livestock depredation,

associated livelihood, and safety of humans and pets. These arguments are local or regional in scale and are focused on the immediate or short-term impacts of Mexican wolves and conservation interventions.

According to the last official count (December 2018) there are 131 Mexican wolves in the Arizona and New Mexico wild (FWS 2019d) roaming in thirty packs, with six single-collared wolves roaming independently (AZGFD 2019b).<sup>12</sup> This small population (relative to the estimated thousands of Mexican wolves in the Southwest prior to species decline) is responsible for a very low percentage of livestock death annually.<sup>13</sup> There is no historic or contemporary documentation of a Mexican wolf attacking a person, and while Mexican wolves do come into conflict with pets, it is uncommon (FWS 2017c). Several compensation programs are in place to reimburse ranchers for depredation losses and to offset the cost to ranchers for putting wolf deterrents in place (FWS 2019e). Statistically, the direct impact of Mexican wolf behavior is minimal. Despite the low impact of Mexican wolves, the recovery effort has been sidetracked by “what to do *about* the wolf”. This has diverted focus on what to do *for* the wolf to facilitate species recovery.

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<sup>12</sup> A wolf pack is defined as two or more wolves that maintain an established territory mediated by at least one alpha wolf which retains pack status if another alpha in the pack dies. Nine packs have at least one wolf with an attached radio telemetry collar, such that pack location can be tracked by the collar of a single wolf. Other packs have been formed by uncollared wolves that have either lost their collars or been born in the wild without them. AZGFD. 2019. Mexican wolf update. Phoenix, AZ: Arizona Game and Fish Department.

<sup>13</sup> A rigorous pre-decline population estimate for Mexican wolves is not available, but FWS estimates there were thousands of Mexican wolves in the Southwest prior to U.S. government eradication efforts. FWS. 2017a. Biological report for the Mexican wolf (*Canis lupus baileyi*). Albuquerque, NM: Department of the Interior, U.S. Fish and Wildlife Service.

The agency of the individual (or small group) stakeholder is a significant factor, as it can dramatically influence success or failure of a localized conservation effort. Conservationists are often positioned as proxy for wild animals, but wild animals also directly exert individual and collective agency; creating, mediating and responding to changes in their environments (Philo and Wilbert 2000; Carter and Charles 2013). Wild animals are essentially stakeholders in their own conservation, but the individual and collective agency of wild animals is often overlooked in conservation planning, because conservation efforts are typically addressed at the species level with little regard for the individual animal's consciousness, social relationships, or particular preferences or needs.<sup>14</sup>

The socially constructed Mexican wolf may have more agency and more impact than the flesh-and-blood wolf. Incongruences between perceived threats and actual material impacts of Mexican wolves imply that non-material factors such as narrative, history, tradition, worldviews, and values strongly influence tolerance for coexistence. While Mexican wolf conservation necessarily addresses the corporeal wolf, long-term survival of Mexican wolves in the Southwest requires disentangling and addressing the psychological, cultural, and socio-political forces that hinder and have potential to derail Mexican wolf recovery.

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<sup>14</sup> Conservation agendas typically do not take individual animals into account, but it is not uncommon for individual (or teams of) scientists or other conservationists to take note of individual animal behavior or develop affections or attachments to individual animals. Such affection or attachment is also common amongst the general public who are removed from direct experience in conservation interventions.

## 1.6 Theoretical Approach

The landscape of Mexican wolf conservation is constantly becoming through geological processes, and activities of the biotic communities (including humans) living within the landscape, and human social systems. Landscapes are shaped by environmental processes such as water flow and weather events, and by activities of living beings in the landscape such as the foraging, hunting, or nest building of animals. While wild animals are often managed and objectified, they are a part of a landscape that eludes control in both a practical and a representational sense. Wildlife moves within the landscape, as well as in and out of a landscape, crossing political, geographical, social and visual boundaries. Wildlife reflect a region's history, politics and traditions and act as a vehicle to bind human culture to the land in ways that are both unifying and disruptive.

Landscapes are also shaped by cultures, as they are altered to reflect the particular ideals of cultures who control them (Sauer 1925). In addition to material shaping of landscapes through activities such as irrigation and farming, human social structures such as labor, politics and law modify landscapes through controlling activities. Thus, landscapes can embody the politics, traditions, and nostalgia of those who experience the landscape objectively and phenomenologically. Amongst stakeholders, these contested landscapes may represent the open, the wild, and the untouched, or the closed, the managed and the marginalized.

The Mexican wolf conservation landscape is simultaneously a historical social construction and the product of billions of years of human vacancy. I use the term “[Re]animation”, which refers to the literal return of vital forces to the landscapes (as in the case of wildlife reintroductions), to the sustaining of vital forces in the landscapes that



allows vital flow, and to the philosophical and social renegotiation of human animality ([Re]animalization) in the context of shared human-animal landscapes.

Sara Whatmore argues that such renegotiation requires geographies that refuse to fragment the “living fabrics of association, and insist on re-cognition of the intimate, sensible and hectic bonds through which people and plants; devices and creatures; documents and elements take and hold their shape in the fabric of everyday life (Whatmore 2002, 3).” Such an approach requires interdisciplinary thinking, multi-dimensional frameworks, novel methods, and ultimately collaborative application. Integral Ecology offers a relational analytical framework in which to address the complexities of research in four coexistent terrains.

### 1.7. Integral Ecology

Conservation work has become increasingly cross-sector and interdisciplinary, and the call has been made across the sciences and humanities for more holistic approaches to “wicked” problems that reconcile epistemological and technological patterns of knowledge production, management and decision-making systems across diverse intellectual landscapes (Granjou and Arpin 2015).<sup>15</sup> Boundary organizations have attempted to translate interdisciplinary knowledge for policy makers (Parker and Crona 2012), but the linking and synthesizing knowledge remains challenging.

Western thought from the 20th century forward has been largely siloed, and thus enlightening only so far as separate lighthouses of knowledge cast their beams. The

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<sup>15</sup> Wicked problems are those that resist resolution due to incomplete understanding of the problem, complex interdependencies, and changing variables. Rittle, H. W. J. & M. M. Weber. 1973. Dilemmas in general theory of planning. *Policy Sciences*, 4, 155-169.

ecological concept, which is itself a holistic natural sciences framework, has germinated numerous ecological offspring, leaving us with what Esbjörn-Hargens and Zimmerman tabulate as an excess of 200 different ecologies across different disciplines (Esbjörn-Hargens and Zimmerman 2009a). Esbjörn-Hargens and Zimmerman attempt to unite these various ecologies into a single ecological framework called Integral Ecology (IE). IE, based on Ken Wilbur's Integral Theory, is a content-free framework that attempts to include as many perspectives, styles and methodologies as possible while remaining coherent (Wilber 2004). Thus, IE is a meta-paradigm that draws together existing ecological paradigms into an interrelated network that mutually enriches all ecologies.

Esbjörn-Hargens and Zimmerman define IE as “the study of subjective and objective aspects of organisms in relationship to their subjective and intersubjective environments (Esbjörn-Hargens and Zimmerman 2009a, 517)”. The framework divides the knowledge into four terrains: individual interior, collective interior, individual exterior and collective exterior; or the I, WE, IT and ITS (Figure 1.2).

IE aims to cultivate a broader vision of reality through the synthesis of multiple paradigms and recognition of the primacy of the interior dimensions of the individual (self and consciousness) and the group (culture and worldview).

Because the framework is content-free, it is value-free in terms of knowledge. Thus, it includes scientific knowledge but does not privilege it. This framework integrates elements of the Kosmos beyond the material plane so that consciousness, aesthetics, and spirituality are considered alongside what is in the observable plane. IE emphasizes perspectivism and presumes that all life has capability of noticing and apprehending (Esbjörn-Hargens and Zimmerman 2009a), and it positions all subject as situated

knowers, invoking broader consideration of ethics and ethical imperatives. The IE framework situates a subject in the center of the four quadrants; thus always experiencing the four quadrants simultaneously. Each of these quadrants is extended into the others, so there is no hard separation between subject and environment.

Changing institutions, physical landscapes, economics, species dynamics and the actions of individual people and animals can be externally observed or systemically analyzed. These external variables are highly influenced by the collective and individual *interiors* of actors (human and non-human). Collective interiors include the ontological and epistemological perspectives that inform worldviews, ideologies, group identities, morality and *defacto* rules and norms of cultures. Individual interiors include the emotions, beliefs, and self-identities of individual actors.<sup>16</sup> Interior perspectives on the nature of being, and the validity of knowledge deeply affect how individuals and groups experience and respond to environmental change. Narrative mediates and links the four terrains.

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<sup>16</sup> *Interiors* here refers to psycho-social interiority, not biological interiority, though they are linked. Non-human animals also have collective and individual interiors. However, our knowledge of animal interiors is limited, and primarily gained from external observation of animals. The extent and complexity of non-human animal interiors is unknown and is an uncertainty that must be accepted in conservation.

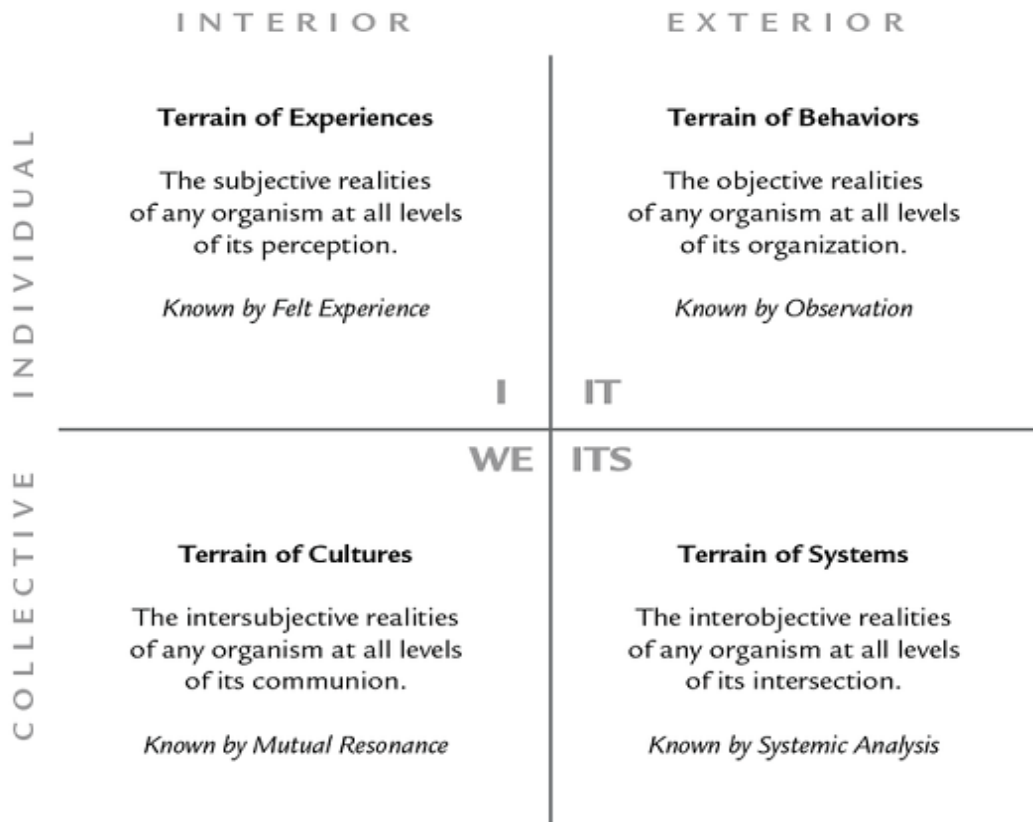


Figure 1.2. The Four Terrains of Integral Ecology. The quadrants represent four core knowledge terrains and corresponding perspectives of an individual (Esbjörn-Hargens and Zimmerman 2009a).

### 1.8 Methods Overview

Analyses of conservation issues often include investigation of observable and quantifiable political, economic and physical factors, but highly influential cultural and individual interiors are often overlooked or under-examined. This hinders understanding of conservation issues and can result in shallow solution development and ineffective implementation of solution options that do not account for how individuals and groups experience conservation. To understand the relational aspects of conservation landscapes, a first task is to determine where the actors perceptively “are”. I utilized the IE framework to analyze and link perspectives in Mexican wolf reintroduction conflict as

expressed in transcripts from two public hearings on the Mexican wolf recovery program. I conducted a qualitative text analysis of explicitly stated conflict factors and mapped these according to the IE framework. I then conducted metaphor and emotion analyses to access interior subjective and intersubjective perspectives, and as a means of sorting through the meshwork of individual factors. Finally, I identified conflict themes and narrative linkages across the terrains of experience, culture, behavior, and systems (or structures).

## 1.9 Conclusion

Whatmore (2002) muses that to ask what is wild is to always simultaneously ask where is wild? A relational approach to geography recognizes the wild as relational and fluid, such that both the agency of wildlife and the agency of the human influence the creation of real and imaginary wild places (Whatmore 2002). This dissertation relationally situates the wild imaginary in the embodied, mythologically, and metaphysically forested landscapes of Mexican wolf reintroduction.

In Chapter Two I present the physical and historical geography of the U.S. Southwest and the wilderness areas where Mexican wolves have been reintroduced. Following that, I detail the Southwest's historical geography, including settlement of the west and predator eradication. Chapter Three provides a history of early American conservation; establishing the environmental, cultural, economic and political changes that formed the present conservation landscape. In Chapter Four I summarize theory on the operational influences of narrative, metaphor, emotion in creation of worldviews and values. Chapter Five provides an illustrated tour of the history of wilderness and wolves

in Western culture and demonstrates the operation of narrative in the social construction of wolves and the wild. Chapter Six examines scientific axioms and the influence science narratives have had on human perceptions of animality and nature and as well as on conservation science. Chapter Seven expands on a relational approach to animal geography and wildlife conservation, which addresses some of the limitations discussed in Chapter Six. Chapter Eight synthesizes this knowledge in an analysis of Mexican wolf reintroduction. I conclude in Chapter 9 with summary findings and recommendations for Mexican wolf recovery conflict mitigation.

## CHAPTER TWO

### LITERATURE REVIEW: PHYSICAL AND HISTORICAL GEOGRAPHIES

#### 2.1 Physical Geography of the Southwest

The “Southwest” is an informal geographic designation for the southwestern portion of the U.S. A non-standardized term, the Southwest is used to describe cultural, political and physical geographies, which may or may not have defined boundaries. Broadly conceived, the term can encompass lands as far east as Texas and Oklahoma, as far north as Colorado and Utah, and as far west as California. More refined conceptions separate California as part of the West, but not the Southwest (USGS 2018) or classify Texas and Oklahoma as part of the South, but not the Southwest (U.S. Census Bureau 2010). Arizona and New Mexico are commonly considered to be the nexus of the Southwest, and this research is centered in those two states. Arizona and New Mexico are characterized by marked differences in history, culture, climate, and physical geography from the states on the peripheries

of the broader Southwest designation (Figure 2.1).

Like other states in the western U.S., New Mexico and Arizona are large in area, compared to eastern states, with Arizona ranking 6<sup>th</sup> largest with over 72.5 million acres, and New Mexico ranking 5<sup>th</sup> largest with over 77.5



*Figure 2.1.* States in red and maroon are in the western U.S. census region. Striped states are in the USGS Southwest region but are categorized by the U.S. census as western states. Image source: (Secret Saturdays 2016).

million acres (Hardy Vincent, Hanson and Argueta 2017). The large geographic areas of these states encompass diverse landscapes that include deeply forested mountains, high plateaus, low deserts, grasslands and riparian areas.

Water scarcity is a primary concern in the Southwest, which has suffered a period of prolonged drought and faces strong predictions of severe drought over the next thirty years (MacDonald 2010). Arizona and New Mexico receive little rainfall and have the least water area of all U.S. states.<sup>17</sup> Most major rivers in Arizona and New Mexico, including the storied Rio Grande and the Colorado are heavily controlled with dams and diversion structures to provide water for irrigation and municipal use (American Rivers 2018b).

A once wild river, the six-million-year-old Colorado, which flows southwest through Arizona's famed Grand Canyon, is now one of the most controlled rivers in the world (American Rivers 2018b). Since the early 20th century the Colorado River and its tributaries have been extensively dammed to serve as the primary water source for thirty-six million people in the Southwest (Waterman 2010; American Rivers 2018d). All of the river's water is allocated and diverted to reservoirs and aqueducts for agricultural irrigation and domestic water supply (Konieczki and Heilman 2004).<sup>18</sup> Though dramatic population increases are predicted for the Southwest, it is estimated that the region is already close to the limit for water capacity to support cities, industry, agriculture and

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<sup>17</sup> New Mexico has (.20%) and Arizona (.30%) water area USGS Water Science School. 2010. How much of your state is wet? <https://water.usgs.gov/edu/wetstates.html> . (accessed 19 January 2018). *ibid.*

<sup>18</sup> Damming and diversion of the Colorado River was not without opposition. Arguments against damming and diversion have historically been, and continue to be, put forward by environmental activists and legislators. Loomis, B. 2013. 50 years later, Glen Canyon Dam is still controversial. In *The Arizona Republic*. Phoenix, AZ.



ecosystems (Sabo et al. 2010). The lower Colorado is now dry, and the river no longer reaches the sea (Zielinski 2010).

The Rio Grande, one of North America's longest rivers (1990 miles), flows south through New Mexico and forms part of the U.S.-Mexico international border. The River supplies water to around 6 million people, and serves as a critical wildlife corridor connecting multiple ecoregions in the U.S. and Mexico (Rio Grande International Study Center 2019). It is considered one of the most endangered rivers in the world (Rio Grande International Study Center 2019). Like the Colorado, the Rio Grande's water supply is dwindling. The upper watershed is expected to collect 30 percent less water by the end of the century due to decreased snowpacks and higher evaporation. Damming and water over-extraction are major threats to the river (American Rivers 2018c). Eighty percent of the water taken from the Rio Grande is used for agriculture (Rio Grande International Study Center 2019). Its water supply is so heavily allocated, that irrigation water had to be leased to enable restoration work on its own banks (American Rivers 2018c).

## 2.2 Physical Geography of Mexican Wolf Recovery

The Southwest is known for its desert landscapes, epitomized by dusty and dry flat lands, rusty canyons, rocky buttes, cacti, and heat-tolerant animals like rattlesnakes, road runners and scorpions. However, the Southwest boasts diverse landscapes, and with the exception of tropical forest, all planetary biomes are represented in Arizona alone (AZGFD 2018b). The reintroduction of Mexican wolves takes place in heavily forested, high elevation areas straddling east-central Arizona and west-central New Mexico, and

includes the contiguous Apache-Sitgreaves and Gila National Forests (FWS 2017b).<sup>19</sup> These forests collectively comprise well over five million acres (Rogers 2003; Shaw 2008) (Fig 2.2).<sup>20</sup> They are primarily forested with ponderosa pine and pinyon-juniper (Rogers 2003; Shaw 2008), and more closely resemble high deserts of the Pacific Northwest U.S. than their neighboring lowland deserts.<sup>21</sup>

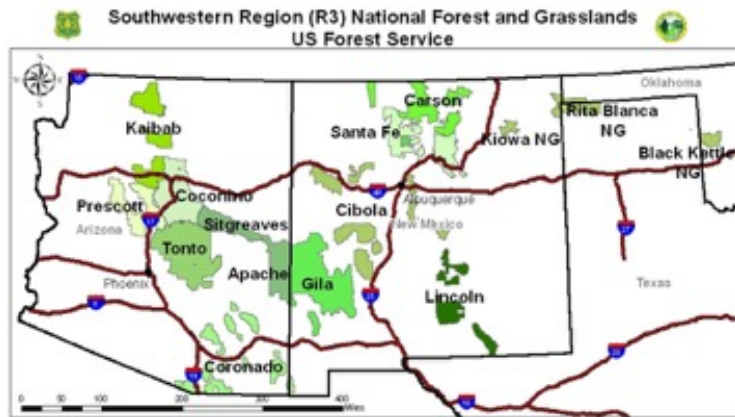


Figure 2.2. Mexican gray wolves are reintroduced into contiguous Apache-Sitgreaves National Forest (east-central AZ) and Gila National Forest (west-central NM).

Elevations in this region range from 3500 to 11,500 feet (the highest point is Mt. Baldy in Arizona), and in winter months large portions of the forests are snowcapped (USDA Forest Service 2018a; USDA Forest Service 2018c). The Apache-Sitgreaves and Gila forests are located in a transition zone where the Colorado Plateau gives way to the basin and low desert regions. The zone is crowned by the majestic

<sup>19</sup> Collectively, mountains in the Apache-Sitgreaves are commonly referred to as the White Mountains. USDA Forest Service. 2018a. Apache-Sitgreaves National Forests. <https://www.fs.usda.gov/main/asnf/about-forest>. (accessed 31 December 2018).

<sup>20</sup> Arizona’s Apache and Sitgreaves forests are managed together as a single national forest: Apache-Sitgreaves (2,015,690 acres). Rogers, P. 2003. Forest Resources of the Apache-Sitgreaves National Forest. Ogden, UT: Rocky Mountain Research Station. New Mexico’s Gila National Forest is 3,324,594 acres Shaw, J. 2008. Forest Resources of the Gila National Forest. Ogden, UT: Rocky Mountain Research Station.

<sup>21</sup> Apache-Sitgreaves and Gila forests are part of one of the world’s largest and healthiest ponderosa pine forests American Rivers. 2018. Gila River. <https://www.americanrivers.org/river/gila-river/>. (accessed 15 May 2018). *ibid.*

Mogollon Rim (the edge of the Plateau), a dramatic escarpment stretching more than two hundred miles across Arizona and into New Mexico (USDA Forest Service 2018a).

The Rim averages more than 2000 feet in height, and in some places drops sharply by as much (NPS 2018d).<sup>22</sup> Dramatic changes in elevation along the Rim result in an abrupt ecological transition between the lowlands and highlands that is evidenced in changes in plant and animal communities.<sup>23</sup> It is not uncommon for transition zones to form a liminal space in which flora and fauna specifically adapt to unique habitats (Banks-Leite and Ewers 2009). For example, near the Rim, Spanish Bayonet typical of the lowland Sonoran Desert grows alongside juniper which is typically found in higher elevation forests (Arizona-Sonora Desert Museum 2018). A transition zone can provide unique habitat for species specialized to its environment. For example, the Mogollon Rim is one of two locations where the endangered Chiricahua leopard frog is extant (Plattz and Mecham 1979). More than 200 species of birds inhabit the Rim, as well as a diversity of mammals including elk, whitetail deer, black bear, mountain lion, fox, bobcat, javelina, and coyote (AZGFD 2018c). In recent years, Mexican wolves have returned to roam the Rim (AZGFD 2018d).

Over 30 lakes and over 1000 miles of rivers and streams are in Apache-Sitgreaves alone (USDA Forest Service 2018a). Headwaters of the Little Colorado, the Gila, the Mimbres, the Black, and the San Francisco Rivers are all in this region (USDA Forest

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<sup>22</sup> The top of the Mogollon Rim is 7000-8000 feet above sea level, and the land below the rim is 4000-5000 feet above sea level.

<sup>23</sup> Ecological transition zones can be abrupt, gradual or staged (in which there are a series of intermediate habitats). Banks-Leite, C. & R. M. Ewers. 2009. Ecosystem boundaries. In *The Encyclopedia of Life Sciences*, ed. ELS.

Service 2018a). Though characterized by dense forests, high mesas and steep canyons, the area also has rolling hills and grasslands conducive to ranching, and rural ranching communities exist in this region adjacent to or surrounded by public lands.<sup>24</sup>

The Apache-Sitgreaves and Gila National Forests contain specifically designated wilderness areas in New Mexico: The Gila, The Aldo Leopold, and the Blue Range, as well as the Blue Range Primitive Area in Arizona.<sup>25</sup> The Gila and Aldo Leopold wildernesses are contiguous. The Blue Range is northwest of the Gila and Aldo Leopold wilderness areas and connects to the Blue Range Primitive Area. All of these wilderness areas are connected by national forest lands. Wilderness designated as such by the Wilderness Act is meant to be preserved in its natural state, so there are no roads or resorts in wilderness areas, and motorized vehicles and mechanized equipment, including bikes or wagons are not permitted (USDA Forest Service 2018f).<sup>26</sup> However, hunting and fishing are allowed in officially designated wilderness areas. Though heavily impacting the natural state of the land, livestock grazing is also allowed in wilderness areas (USDA Forest Service 2018d).

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<sup>24</sup> Wolf reintroduction is done with cooperation of the Fort Apache and San Carlos Apache reservations west-adjacent to Apache-Sitgreaves National Forest.

<sup>25</sup> While the Blue Range Primitive area it is not formally designated as a wilderness area it is managed by law as a wilderness area. USDA Forest Service. 2018b. Blue Range Primitive Area-Alpine district panel. <https://www.fs.usda.gov/recarea/asnf/recarea/?recid=75388>. (accessed 31 December 2018). I include the Blue Range Primitive Area in any general discussions about wilderness areas.

<sup>26</sup> Wheelchairs used as necessary medical appliances are permissible.

## 2.3 Historical Geography of the Southwest

### 2.3.1 Settlement of Contested Lands

Lands in the U.S. Southwest were some of the last to be privatized and exploited in the contiguous U.S., as the entire area did not join the U.S. until the mid-19<sup>th</sup> century (Fireman 1982). The 1848 Treaty of Guadalupe Hidalgo that ended the U.S.-Mexican War ceded 525,000 square miles of land to the U.S. securing transcontinental U.S. expansion across the Southwest to the Pacific Ocean (Fireman 1982).<sup>27</sup> The southernmost parts of Arizona and New Mexico were subsequently obtained from Mexico in the 1853 Gadsden Purchase (Fireman 1982).<sup>28</sup>

Following acquisition of the Southwest territories, government initiatives to promote European-American settlement ensued in the form of a series of homesteading and development acts that initiated disposal of approximately 816 million acres of federal land to private ownership (Hardy Vincent et al. 2017).<sup>29</sup> <sup>30</sup> The Homestead Act of 1862 granted public lands as large as 160 acres to individuals willing to live on and work the

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<sup>27</sup> With the Treaty of Guadalupe Hidalgo, Arizona secured all or parts of New Mexico, California, Colorado, Nevada, New Mexico, Utah and Wyoming. Fireman, B. M. 1982. *Arizona: Historic Land*. New York: Alfred A. Knopf.

<sup>28</sup> Arizona was originally part of the New Mexico Territory.

<sup>29</sup> Prior to the Mexican-American War, the area had been settled and ranched by Mexicans who secured land grants. Apache Indians had for centuries survived by raiding Spanish-American settlements. Unable to defend their lands against Apaches, many settlers abandoned homesteads and left cattle to roam. The U.S. granted full rights of citizenship to Mexicans choosing to stay in the ceded territory and guaranteed to honor the land grants Mexicans had secured prior to the war. Fireman, B. M. 1982. *Arizona: Historic Land*. New York: Alfred A. Knopf.

<sup>30</sup> An additional 466 million acres of Federal lands have since been transferred to states, including approximately 44 million acres that were eventually transferred to Alaskan natives under and Native selection laws. Hardy Vincent, C., L. A. Hanson & C. N. Argueta. 2017. Federal land ownership: Overview and data. Washington, D.C.: Congressional Research Service.

land (Foner and Garraty 1991).<sup>31</sup> The law was intended to provide opportunity to any individual head of a family (including women and freed slaves), but few had the tools, seed or livestock needed to establish successful homesteads (National Archives 1998). Of the 500 million acres granted between 1862 and 1904 only about 80 million acres went to family homesteaders, and the rest of the land (about 84%) went to cattlemen, miners, lumbermen, railroads and speculators (National Archives 1998; Bradsher 2012). The discovery of gold in California immediately after cessation in 1848 prompted early and rapid immigration, urbanization and resource extraction in the coastal state (Bancroft 1888). Arizona and New Mexico developed more slowly, because climate extremes and the relative isolation (there were few roads and no railroads) posed settlement challenges, and the lack of water in the desert made cattle ranching and farming difficult without irrigation (Fireman 1982).

The Desert Land Act of 1877 was designed specifically to encourage development in the arid West through land grants for reclamation, irrigation and cultivation of arid and semi-arid lands (Landstrom 1954). The Act increased homestead allotment maximums to 640 acres (Sheridan 2012 org. 1995). Unlike the Homestead Act of 1862, the Desert Land Act did not require residency on the land, and though water rights were not granted through the Act, the Act was used by speculators in order to gain

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<sup>31</sup> Homesteaders were given options to buy the land for \$1.25 per acre after residing on the land for at least six months. The Homestead Act remained in effect for over 100 years. Library of Congress. 2018. Homestead Act. <https://www.loc.gov/rr/program/bib/ourdocs/Homestead.html>. (accessed 15 May 2018).

control of water (Ganoë 1937).<sup>32</sup> Numerous grants were obtained fraudulently by cattlemen who had no intention of reclamation and instead claimed long tracts of land alongside extant streambanks to gain market advantages by controlling irrigation (Ganoë 1937). Historian Thomas Sheridan notes that water control meant essential control of the range, and states that within 20 years of the Desert Land Act: “The infinite land suddenly became finite; the wilderness was transformed into a gigantic cattle ranch (Sheridan 2012: 137).”<sup>33</sup> Large areas of the western valleys including Arizona’s Salt River valley were patented under the Desert Land Act (Landstrom 1954). Fraudulent land acquisitions were rampant under these early homesteading acts, sparking a practice of land and water “grabbing” and real estate fraud in the West that would follow into the 21<sup>st</sup> century under various foreign and domestic swindles (Ganoë 1937; Landstrom 1954; The New York Times 1976; Nelson 2000; Ross 2011; Sheridan 2012 org. 1995; Wagner 2015; Reagor 2017; Cochise County 2018; The Wilderness Society 2018).

In the early years of homesteading, Arizona and New Mexico mining settlements were necessarily confined to areas near ore deposits, and the need for irrigation relegated farms to areas near water (Fireman 1982). Ranching operations, however, sprang up throughout the Southwest in both low deserts and high elevation forested areas (Fireman 1982). Despite ongoing efforts to populate and develop in the region, persistent

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<sup>32</sup> Mormons in the West rejected the privatization of water and advocated for cooperative bases for distribution of water and other resources, modeled after Ute Indian practices. Though Mormon stewardship appealed to some leaders including John Wesley Powell who headed the USGS at the time, cooperative practices were overrun by powerful agriculture, mining, timber and railroad companies bent on exploitation for profit. Gottlieb, R. 1993. *Forcing the Spring: The Transformation of the American Environmental Movement*. Washington, D. C.: Island Press.

<sup>33</sup> Sheep raising also boomed in Arizona with as many as 19,000 sheep in Yavapai County; 133,399 in Apache County; 201,449 in Coconino County; and thousands more in other counties by 1894. Sheridan, T. E. 2012 org. 1995. *Arizona: A History*. The University of Arizona Press.

opposition from Apache Indians limited small scale homesteading. Apaches populated essentially the entire landscape of Arizona and New Mexico, and they were known for fiercely defending their territory and resources (Fireman 1982). Many mining, ranching and farming settlements, unable to defend against Apache raids, were abandoned (Fireman 1982; Sheridan 2012 org. 1995). The extension of railroads into Arizona and New Mexico in the late 19<sup>th</sup> century increased western movement from the Appalachian Mountain region by pioneers known for their fearless autonomy (Sheridan 2012 org. 1995). Predominantly Scots-Irish, these pioneers were self-reliant individualists who shunned government control and formal education, and preferred to live independently in isolation (Webb 2004). Sheridan describes them as: “pioneers of American myth – proud, independent families who leapfrogged from one frontier to another, fighting Indians; killing wolves, mountain lions and grizzly bears; and living off the land (Sheridan 2012: 137).” These pioneers settled in remote areas of Arizona and New Mexico; their autonomy to become a thorn in public lands and wildlife conservation.

By the 1890s, military had been sent to defend the Southwest against Apaches, and had largely confined Indians to reservations (Fireman 1982). Indian reservations and military posts formed a large part of the market for beef, and expanding ranches depleted massive water and grass resources (Sheridan 2012 org. 1995). Livestock roamed unfenced, grazing on the open range of public lands at no cost (Sheridan 2012 org. 1995). Expanding ranches extended well into traditional territory of wolves, mountain lions, bears and other predators in mountainous areas (Brown 2002 org. 1983). This habitat encroachment reduced range area for predators and brought predators and settlers into regular contact on the settled-wild periphery. Subsistence hunting by homesteaders,



miners, and cowboys reduced the principal wild prey of wolves and other predators (Brown 2002 org. 1983). As livestock began to dominate the landscape, wild animals began to prey on domestic sheep and cattle that were more plentiful in number and more efficiently hunted than wild prey (Brown 2002 org. 1983).

Around the same time that predator elimination in support of ranching began to receive government attention, ranching became a problem of its own. By 1890, extensive overgrazing was occurring across the Southwest (Fireman 1982; Sheridan 2012 org. 1995).<sup>34</sup> The years between 1890 and 1892 received very little rain and perennial grasses failed, leading to massive livestock death (Brown 2002 org. 1983). Drought and over grazing caused the loss of as much as 75% of cattle in Arizona alone (Brown 2002 org. 1983; Sheridan 2012 org. 1995). Carcasses of dead livestock littered creek beds to be scavenged (Sheridan 2012 org. 1995), accustoming wildlife to livestock as a food source.

Though the drought of the 1890s led to consolidation or abandonment of many livestock operations, remaining ranchers pushed against conservation initiatives that impacted grazing (Sheridan 2012 org. 1995). In 1896 when the National Academy of Sciences called for the elimination of grazing on reserves, ranchers reacted as if they were being betrayed by the country they had served through developing the frontier (Sheridan 2012 org. 1995). Political pressure from ranchers ensured that grazing would still be allowed in wilderness areas (Ashcroft et al. 2012).

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<sup>34</sup> Ranching remains a major impact on public lands. As of 2016, 30% of assessed federal rangelands fell below land health standards, with significant damage attributed to livestock grazing. Bloomer, L. & R. Just. 2018. Public Lands Grazing Rule. <https://eelp.law.harvard.edu/2017/12/public-lands-grazing-rule/>. (accessed 19 July 2019).

The Reclamation Act of 1902 put the federal government back in control of many water resources and enabled the government to recover expenses from ranchers for irrigation in the Southwest (USBR 2018). With the Taylor Grazing Act of 1934, the federal government gained control of grazing activities on public lands (Sheridan 2012 org. 1995). Sections of land were fenced, cattle were rotated, and ranchers were charged fees based on the carrying capacity of the range (Sheridan 2012 org. 1995). These fees were as low as five cents per unit (calf and cow) per month (Sheridan 2012 org. 1995), and were considered low even for the time period, as the government reinvested as much as 25% of fees in fencing, stock tanks and wells for livestock. However, these new grazing arrangements favored large scale ranchers, and many smaller ranchers sold off their stock because they lacked enough land and water to run their operations (Sheridan 2012 org. 1995). Essentially, the Taylor Grazing Act required livestock owners to purchase permits for rights to graze livestock they had formerly grazed on public lands for free. The tensions between ranchers and the federal government that have since persisted, are arguably less about money and more about control (Sheridan 2012 org. 1995).

Though in retrospect the livestock industry acknowledges its part in the devastation of grasslands (Sheridan 2012 org. 1995), at the time few ranchers voluntarily limited their grazing and instead grazed the same numbers while making management changes with technologies (Sheridan 2012 org. 1995). Ranchers began to use windmills to pump water for livestock (Fireman 1982; Sheridan 2012 org. 1995), which siphoned resources from the landscape and its wild inhabitants. Barbed wire became available in 1874. It was the first wire able to restrain cattle, and it was easier to erect and more

affordable than traditional fencing. Barbed wire was widely put to use to contain cattle, thereby eliminating the need for large roundups of free-ranging livestock and providing ability for ranchers to grain feed cattle in pens after they had grazed for a couple years on grass (Fireman 1982).<sup>35</sup> Fencing was also put in place to protect water resources from competing free ranging stock (Sheridan 2012 org. 1995). This fencing also created barriers to water for large terrestrial wildlife. During the drought years, famished livestock became easy prey for wolves and other predators (Brown 2002 org. 1983). The abundance of dead and dying livestock as a food source may be the reason that wolves were reportedly relatively abundant in the 1890s, despite reduced numbers of natural prey such as white tail deer during the drought years (Brown 2002 org. 1983).

Any wolf kills of livestock during the drought period represented critical losses for ranches that were already struggling to survive due to lack of water and grass (Brown 2002 org. 1983). Modeling predator control actions of established U.S. states, the Arizona-New Mexico Territorial Legislation passed the Territory Bounty Act in 1893, which allowed counties to offer bounties for predatory animals including grizzlies, mountain lions, bobcats and wolves (Brown 2002 org. 1983).<sup>36</sup> A 60-year, multi-million dollar campaign followed to rid the Southwest of wolves, a campaign that David Brown, in *The Wolf in the Southwest*, argues was comparable to the extensive government effort

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<sup>35</sup> Barbed wire was invented in 1874, but was initially used primarily to fence free roaming cattle out of crops. Sheridan, T. E. 2012 org. 1995. *Arizona: A History*. The University of Arizona Press.

<sup>36</sup> New Mexico and Arizona became the last two territories to become states in the contiguous U. S. (in 1912). Thus, there were no formal state Game and Fish Departments in Arizona and New Mexico in the 19<sup>th</sup> century.

to neutralize the Apaches (Brown 2002 org. 1983).<sup>37</sup> Wolves were killed using guns and poison (Brown 2002 org. 1983). Many wolves were killed through denning (the practice of locating a wolf den and killing the pups). Others were captured in traps placed strategically along wolf runways; historical migration routes that wolves travel between Mexico and the U.S. (Brown 2002 org. 1983). Wolves were eventually extirpated from the Southwest, and the Mexican wolf became extinct in the U.S. In 1973, with the passing of the Endangered Species Act, Mexican wolves were listed, setting a chain of events in motion for their eventual, and predictably contentious, reintroduction into the Southwest.

### 2.3.2 Mexican Wolf Eradication

Since early U.S. colonization, farmers and ranchers have tried to control predators. Predators were considered vermin amongst farmers and ranchers, and for the first 200 years of settlement, farmers and ranchers attempted to eliminate animals (primarily bears, wolves, and mountain lions) that preyed on livestock by constructing deadfalls, setting traps and snares, and hunting with dogs (de Calesta 1976). Bounty systems to promote predator eradication were also put in place early on.<sup>38</sup> In the 19<sup>th</sup> century, U.S. livestock operations expanded, dramatically increasing the number of

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<sup>37</sup> Predator elimination programs were funded at territorial, state and federal levels. Brown, D. E. 2002 org. 1983. *The Wolf in the Southwest: The Making of an Endangered Species*. Silver City, NM: High Lonesome Books.

<sup>38</sup> The first bounty system for wolves was established in Massachusetts in 1630. de Calesta, D. S. 1976. *Predator control: History and policies*. *Oregon State University Extension Service*, Extension Circular 710.

domesticated animals on the landscape. During this same period, human overhunting of deer, elk and bison reduced wild natural prey for predators. Mass killing of American Bison reduced the wild bison population from over 30 million to less than a few hundred (FWS 2019f).<sup>39</sup> Bison were a major food source for predators, and the dramatic decline of wild prey combined with an increase of domestic animals led to an increase in predator depredation on livestock (de Calesta 1976; FWS 2007). Livestock operations responded by using strychnine to kill predators, and the USDA Bureau of Biological Survey (BSS) began providing information to livestock owners on how to kill and trap wolves (de Calesta 1976).

Livestock operations were considered extremely important to the settlement of the West, as they solidified land occupation through pastoral intensification, and supplied a food source that supported the mining, timber, and railroad operations that were important to western expansion.<sup>40</sup> Disdain for predators was significant, particularly amongst ranchers, who wielded tremendous political power at regional and national scales (Brown 2002 org. 1983). Livestock depredation threatened settlement, and settlement of newly acquired lands was a federal priority. With containment of Apaches, extension of railroads, and expanded irrigation already secured or under way by the late 19<sup>th</sup> century, efforts to eradicate predators became a chief government priority (Brown 2002 org. 1983).

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<sup>39</sup> Bison were a major resource (for food and hides) for plains American Indians. U.S. government-sponsored killing of bison was a means for killing off or controlling American Indian populations. Settlement, sport hunting and the trade of hides also contributed to the decline, the latter which American Indians participated in. Lueck, D. 2002. The extermination and conservation of the American bison. *Journal of Legal Studies*, XXXXI, S609-S652.

<sup>40</sup> Settlement and land modification were both considered means of securing ownership of lands.

By 1900, livestock growers had begun to request predator control assistance from the federal government. In 1915, Congress appropriated funds for experiments and demonstrations for elimination of predators that were injurious to livestock and expanded predator control beyond ranching and farming lands into remote areas in an attempt to reduce predator populations in the wild (de Calesta 1976).

Wolves were a primary target for large-scale predator elimination, and by the mid-20<sup>th</sup> century, only a few hundred wolves remained in the lower 48 states: several hundred in Minnesota; an isolated population on Isle Royal in Michigan; a few red wolves in the East, and; a few Mexican wolves in the Southwest (FWS 2007). Ultimately, the complete U.S. population of Mexican wolves was lost with the last confirmed wild Mexican wolf in the U.S. reported in 1970 (FWS 2017b).

### 2.3.3 Recent Historical Geography

In 1976, congress passed the Federal Land Policy and Management Act, which declared intent to keep remaining public lands under federal ownership, with states in the West retaining significantly higher percentages of federal lands than states east of the Mississippi River (Hardy Vincent et al. 2017). This declaration prompted the Sagebrush Rebellion beginning in the late 1970s, an effort to strengthen state or local control in management decisions relating to federal land (Hardy Vincent et al. 2017). Debate persists in the Southwest over desire for state versus federal control (Hardy Vincent et al. 2017; Trust for Public Land 2018), and these differing perspectives influence wildlife conservation conflict, and have a strong bearing on Mexican wolf recovery conflict.

Today, the Southwest retains large amounts of federal, state and tribal lands. More than 38% of Arizona and more than 35% of New Mexico lands are under federal control (Hardy Vincent et al. 2017).<sup>41</sup> Most federal lands in these two states are Bureau of Land Management (BLM) and Forest Service (FS) lands, in which resource extraction, grazing, hunting and other activities are permissible, but smaller percentages of public lands in these states are Fish and Wildlife Service (FWS), National Park Service (NPS) and Department of Defense (DOD) lands (Hardy Vincent et al. 2017).<sup>42</sup> Roughly 13% of Arizona and 12% of New Mexico lands are held in the state trusts (Lincoln Institute of Land Policy Sonoran Institute and Childrens Land Alliance Supporting Schools 2007; Arizona State Land Department 2018).<sup>43</sup> Unlike federal public lands that are accessible to the public, state lands are designated to be converted to their highest and best appraised use, which can be for sale, for lease for grazing, mining, agriculture, municipal, residential or commercial development, or for open space (Lincoln Institute of Land Policy Sonoran Institute and Childrens Land Alliance Supporting Schools 2007; Arizona

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<sup>41</sup> Reported statistics on federal land vary. Statistics cited here include federal lands that are owned and managed by the federal government, but exclude lands administered by a federal agency via easements, leases, contracts or other agreements.

<sup>42</sup> Nearly 30% of DOD lands are in New Mexico. Hardy Vincent, C., L. A. Hanson & C. N. Argueta. 2017. Federal land ownership: Overview and data. Washington, D.C.: Congressional Research Service. Considered unusable for other purposes, these lands have been used for hazardous uranium mining and military testing. Near many tribal lands, native people are unequally exposed to related environmental toxins, thereby othering inhabitants of the land in the way the land has been othered in a process Tracy Voyles calls “wastelanding”. Voyles, T. 2015. *Wastelanding: Legacies of Uranium Mining in Navajo Country*. Minneapolis, MN: University of Minnesota Press.

<sup>43</sup> Revenue from lease and sale of Arizona and New Mexico state lands is designated for the states’ public education funds. Lincoln Institute of Land Policy Sonoran Institute & Childrens Land Alliance Supporting Schools. 2007. Working with the state land office. (accessed 15 May 2018), Arizona State Land Department. 2018. State trust land at a glance. <https://land.az.gov/about>. (accessed 31 August 2019).

State Land Department 2018).<sup>44</sup> Approximately 28% of Arizona and 11% of New Mexico lands are tribal lands held in trust by the federal government (Russell 1993). Private lands constitute approximately 43% of New Mexico and 21% of Arizona.

Contemporary conflict exists nationwide over use, management and disposal of public lands (Glaser, Romaniello and Moskowitz 2015; Buccino 2018; Protect Our Public Land 2018; Trust for Public Land 2018). The large amount of federal lands in Arizona and New Mexico increases the level of debate over use and management of federal lands in these two states. While many public lands belong to all Americans, they are the backyards and workplaces of daily life for people of Arizona and New Mexico. Many residents of these states have strong personal and livelihood ties to these lands, and strong opinions about their management, use and access.

Conflict over the return of Mexican wolves to public lands in Arizona and New Mexico is tied to a long and contested history of occupation, use, management, and conservation of public lands. The next chapter details the history of public lands conservation in the U.S.

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<sup>44</sup> While all federal lands are technically owned by the American public, the term *public land* commonly refers to federal lands that Americans have access to experience and enjoy, and/or to utilize to varying degrees, for resource extraction. In this dissertation, public lands refer to any lands owned by the federal government and administered by the BLM, FWS, NPS, and FS.



## CHAPTER THREE

### LITERATURE REVIEW: EARLY U.S. CONSERVATION

#### 3.1 Overview

Salient narrative has influenced American environmental values that have defined U.S. biopolitical conservation landscapes. The same foundational values and ideologies that informed early U.S. settlement and development also influenced the early American conservation. The following sections illustrate narrative influences on the institutionalization of American conservation.

#### 3.2 Narrative Influence on Early American Conservation

The Age of Exploration (1620-1800 CE) prompted major eastern North American colonization efforts under the funding and direction of European powers. Colonists arrived at a vast wilderness of abundant, scarcely tapped resources dwarfing those of European lands, which by that time had undergone extensive development, cultivation and resource extraction. Colonists executed the British agenda to farm and settle America, and to expand occupation and cultivation as far and as fast as physically and economically possible into the western wilderness (Augustyn et al. 2019).<sup>45</sup> Westward movement began soon after the first settlements were established.

After separation from England in 1776, goals of expansion remained the same for the newly established United States: Push into the frontier as far and as fast as possible. The 1803 Louisiana Purchase doubled the size of the U.S. and prompted then President

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<sup>45</sup> Multiple colonies were established in what is now the Eastern U.S. by numerous European countries, but eventually all colonies came under British Rule.

Thomas Jefferson to commission Meriwether Lewis and William Clark to explore and map the newly acquired territory (Thomas Jefferson Foundation 2019). The Lewis and Clark expedition was a defining enterprise directed by political powers and driven by scientific agenda, but it was also an expedition to stabilize the young nation through economic growth and political consolidation (McLaughlin 2003). Westward movement was guided by a distinct brand of American individualism in which freedom and self-reliance were championed over immersion in wider society. Alexis de Tocqueville described American Individualism as: “a reflective and tranquil sentiment that disposes each citizen to cut himself off from the mass of his fellow men and withdraw into the circle of family and friends (Tocqueville 2004 org. 1835-1840, 585).”

Westward expansion was driven by this individualism and the principle of Manifest Destiny, the philosophical belief that expansion across North America and the spreading of democratic ideals were both a divine right and an obligation (Miller 2006). Westward movement was characterized by a zeitgeist of adventure and the novelty and promise of the frontier (Fireman 1982; Nash 2001 org. 1967; Sheridan 2012 org. 1995), but exercise of Manifest Destiny ensured the conquest of the West through the systematic removal of rights from indigenous people, extermination of animals, and destruction of landscapes that stood in the way of progress considered divinely ordained (Miller 2006).

Concurrent with western expansion, a defining American romance with wilderness was born. The Romantic period (roughly 1750-1850) brought a renewed fascination with the remote, the solitary, the chaotic and the mysterious.<sup>46</sup> During this

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<sup>46</sup> Europeans had a vexatious relationship with the wild, which they carried to the U.S. This is covered in detail in Chapter Five.

period, which encompassed American and French revolutions, the unstructured wilderness was alluring in contrast to the bourgeois and manicured societies of the Enlightenment (Nash 2001 org. 1967). The concept of setting aside of wilderness to be preserved for experience and appreciation as opposed to destroyed or exclusively conserved for resource extraction, was seeded in Romantic era primitivism: the idea that happiness and well-being decreased as civilization and industrialization advanced (Nash 2001 org. 1967).<sup>47</sup>

This intellectual movement fostered later transcendentalist writings of Henry David Thoreau and Ralph Waldo Emerson who, against status quo society, pushed for emersion in nature. Thoreau's *Walden* (Thoreau 1854) and Emerson's *Nature* (Emerson 1836) highlighted the human error in under-appreciation of Nature, emphasized Nature as divine, and argued for Nature's wholeness as inclusive of humans. In his essay *Walking* (1862), Thoreau argues that human completeness (physical, mental and spiritual fulfillment) is contingent on Nature, and famously stipulated: "In wildness is the preservation of the world (Thoreau 1862, 665)".

During this same period, John James Audubon produced his major work, *The Birds of America* (1827-1839), a beautifully illustrated ornithology that has captivated audiences worldwide since publication. In 1859 Charles Darwin put forth his profound theory of evolution in *On the Origin of Species* (Darwin 1859), in which he argued that

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<sup>47</sup> Numerous scientific studies indicate that primitivists were right about nature's link to human well-being. Studies reveal extensive mental and physical health benefits of spending time in nature including reduction of stress, anxiety and depression, increased empathy and emotional stability, increased alertness and concentration, and improved sleep. Maller, C., M. Townsend, A. Pryor, P. Brown & L. St. Leger. 2006. Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promotion International*, 21, 45-54.

all species descended over time from common ancestors and empirically demonstrated that species were not distinctly and separately created. The book was a serious challenge to the notion of human separation from other animals. Transcendental narratives elevated wilderness to the *sublime*, a rare earthly place where one was close to God (Cronon 1995a). Transcendentalist works were influential in the development of the preservationist environmental movement, which emerged at the turn of the century with the writings of John Muir (1838-1914) who, like Thoreau and Emerson, valued nature for its spiritual and transformative qualities.

In tandem with shifts in wilderness perceptions, valuation of wilderness began to shift from low to high, and attitudes toward wilderness began to shift from exploitive to protective.<sup>48</sup> This shift prompted the first U.S. conservation action to protect vast portions of American wilderness: Yellowstone, an area over two million acres, was designated as nature “set apart” through an act of Congress making it the country’s first national park (U.S. Statutes at Large 1872).<sup>49</sup> In 1892 Muir founded The Sierra Club and put forth an argument for wilderness preservation aimed against unregulated privatization and exploitation (Gottlieb 1993). Muir believed that wilderness had intrinsic value, independent of its resource utility (Gottlieb 1993).

Around the same time, a movement fueled by the same frontier spirit for settling the West emerged to preserve it; spurred not by the sublime, but by adventure and

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<sup>48</sup> Cronon (1995) observes that by the early 20th century “Satan’s home had become God’s own temple (72)”. He posits the modern conception of wilderness emerged from convergence of the romantic constructs of the sublime and the frontier. Cronon, W. 1995. The trouble with wilderness; or, Getting back to the wrong nature. In *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon, 69-90. New York: W.W. Norton.

<sup>49</sup> Yosemite had been granted to California in 1864, but it did not become a national park until 1890.

economy. By the last quarter of the century concern about rampant resource extraction arose as the never ending wilderness was being recognized as finite.<sup>50</sup> Rampant timber extraction, mining, monocropping, and monopolization of land and water were threatening resources (Gottlieb 1993). As ranchers were realizing they were running out of grass, sportsmen began to realize that game and fish were being depleted.

While protective attitudes were not universally shared by all Americans, they *were* shared amongst a key set of powerful individuals.<sup>51</sup> The looming prospect of disappearing wilderness spurred a group of politically powerful outdoorsmen to action that defined the future of the American wild. Theodore Roosevelt, an avid outdoorsman, had founded the Boone and Crocket Club in 1887 with zoologist George Bird Grinnell, aiming to promote an ethic of conservation and fair chase in hunting (Gottlieb 1993). The club was an elite organization of mostly wealthy, Ivy League-educated hunters and naturalists, among them forester Gifford Pinchot and General William Tecumseh Sherman (Boone and Crockett Club 2017).<sup>52</sup>

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<sup>50</sup> Many early conservation efforts in Europe, Asia and the United States were spurred by recognition of an impending loss of resources for humans. In 1664 John Evelyn wrote a revolutionary paper advocating for conservation of England's forests, which were fast becoming depleted. Evelyn, J. 2018, org 1664. *Sylva; Or, A Discourse of Forest-Trees and the Propagation of Timber*. Project Gutenberg. Legislation was enacted in 1806 to regulate the felling of teak trees in India, which had been heavily deforested for shipbuilding during the British occupation of India. Misra, K. K. & M. L. K. Murty. 2001. *Peoples and Environment in India*. New Delhi: Discovery Publishing House.

<sup>51</sup> Massive expansion and development continued to occur in the West despite these value and attitude shifts amongst policy makers. Utilitarian attitudes toward wilderness have consistently persisted concurrent to preservationist and exploitive attitudes. In the U.S., advocacy for the wilderness dates back to the early 19th century in response to urbanization and resource extraction, but it was the threat to the western wilderness that prompted federal legislation to preserve wilderness in the last quarter of the century and solidified the foundations of the American environmental movement. Gottlieb, R. 1993. *Forcing the Spring: The Transformation of the American Environmental Movement*. Washington, D. C.: Island Press.

<sup>52</sup> Sherman ironically is known for leading the total destruction of landscapes in the American South during the Civil War.

In 1901, Roosevelt assumed the presidency after the assassination of William McKinley. Roosevelt established the first National Wildlife Refuge in 1903 (FWS 2018d) and established many more protected areas after the Antiquities Act of 1906 instilled power in the U.S. President to proclaim valuable cultural and natural sites as national monuments (U.S. Statutes at Large 1906). In 1916 the National Park Service (NPS) was created with the Organic Act (NPS 2018c). Collectively Roosevelt established protection of 230 million acres of public lands.

This effort would lay the foundation for what would become known as the North American Model of Wildlife Conservation, and while the model is not without criticism, it has been widely emulated around the world (Prukop and Regan 2005). The model is based on Roosevelt's utilitarian conservation approach, as opposed to Muir's aesthetic preservation approach. These two environmental protection ideologies continue to characterize the American environmental movement, and while they work toward similar end goals of environmental protection, they can be at odds amongst members of the broader conservation community.<sup>53</sup>

Protective attitudes toward wilderness emerged from two primary perspectives: The preservationist perspective, engendered by valuation of wilderness predominantly as a place for human respite, aesthetic appreciation, and spiritual elevation; and the conservationist perspective, engendered by valuation of wilderness as a resource.<sup>54</sup> The

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<sup>53</sup> Though there is a distinct difference between a conservationist and a preservationist as outlined above, the terms "conservation community" and "conservation organization" are generally (and are in this dissertation) used to describe communities and organizations with both conservationist and preservationist ideologies.

<sup>54</sup> While I refer here to protective attitudes emerging in a place of power in the U.S., I acknowledge protective attitudes existed long before the 19<sup>th</sup> century, and likely always existed in subsets of the population.

prescription of these values in terms of protective action differs significantly, and this has had a definitive influence on the designation, management and governance of U.S. public lands, with the preservationist approach skewing toward “let it be”, and the conservationist approach skewing toward “let it be managed”.<sup>55</sup>

Conservation and preservation attitudes are not diametrically opposed because aesthetics and utility are not mutually exclusive. Conservationist values are not exclusively based on resources, as aesthetics are often enmeshed in resource conservation approaches (for example, nature tourism assigns economic value to aesthetics). The conservationist value of wilderness “experience” shares the essence of the preservationist value because values are extended from the principle of human exceptionalism: the idea that humans are the most significant beings in the universe. This principle extends to conceptions of success in terms of human progress and expansion, the couching of arguments in terms of human values and human experience, the framing of problems in terms of human struggle, and the construction of solutions primarily in terms of benefits to humanity.

Preservationist and conservationist perspectives are often polarized as intrinsic versus utilitarian, implying that the two approaches are at odds at a values level, but the valuation of wilderness for both is ascribed in terms of value to humans. Intrinsic value is that “in itself” or “for its own sake” (Zimmerman 2015). It is rooted in the non-relational goodness of something; thus independent of subjective desires, interests or pleasures

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<sup>55</sup> Though early environmental attitudes skewed distinctly toward preservationist or conservationist, individuals had and still have varying attitudes toward different kinds of protected areas, and thus may hold both preservationist and conservationist attitudes about nature *writ large*.

(Korsgaard 1986). The preservationist valuation of wilderness is not intrinsic, but instrumental, as aesthetic value is perceived in the service of wilderness to people for respite, beauty, and spiritual elevation.

The recognition of a need to preserve some wilderness for its aesthetic value in conjunction with the acknowledgement that other wilderness would be utilized for development, resource extraction, tourism, and recreation is the basis for the American model of conservation, in which public lands are designated for different purposes and are regulated and managed differently to achieve different goals. Broadly speaking, American public land designations correspond to a hierarchy of protection: wilderness areas receive the highest protection from use and resource extraction corresponding to the highest aesthetic value; in national parks, limited resource extraction is permitted, corresponding to aesthetic and recreational value; and national forests where resource extraction is most permissible, correspond to the highest utilitarian value.

### Section 3.3 Designation and Management of U.S. National Wilderness

Aldo Leopold, later famed for his contributions to formation of a globally embraced land ethic, joined the Boone and Crockett Club in 1923 (Boone and Crockett Club 2017) while working for the USFS. IN 1924, he initiated the concept of protected wilderness areas. At Leopold's urging and with local support, the Forest Service designated the back country of New Mexico's Gila National Forest as a wilderness area to be left without roads (USDA Forest Service 2018d). This designation predicated the Wilderness Act by 40 years.



With enactment of the Wilderness Act of 1964, the Gila was divided into three separately designated wilderness areas: The Gila Wilderness, The Aldo Leopold Wilderness, and the Blue Range Wilderness (U.S. Statutes at Large 1964). These wilderness areas remain within the Gila National Forest (USDA Forest Service 2018d).<sup>56</sup> In 1933, the Blue Range Wilderness was essentially extended across the New Mexico-Arizona border through designation of Arizona’s Blue Range Primitive Area (USDA Forest Service 2018b).<sup>57</sup> The Blue Range Primitive Area is the last remaining designated primitive area in the U.S. (USDA Forest Service 2018b).<sup>58</sup> Together these wilderness areas include more undeveloped land than any other national forest in the Southwest, and are some of the wildest places remaining in the country.<sup>59</sup> It was into these lands that Mexican wolves were reintroduced.

The Wilderness Act gave wilderness a legal definition: “an area where the earth and its community of life are untrammled by man, where man himself is a visitor who does not remain (U.S. Statutes at Large 1964)”. U.S. wilderness areas have always been designated for minimal human use and have been managed to preserve their primeval

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<sup>56</sup> Lands not designated as national parks, national forests or national wildlife refuges are part of the National System of Public Lands, which is managed by the BLM. Wilderness areas can exist within any of these public land systems.

<sup>57</sup> A Primitive Area is defined as an area to remain in a wilderness state.

<sup>58</sup> While the Blue Range Primitive area it is not formally designated as a wilderness area it is managed by law as a wilderness area USDA Forest Service. 2018b. Blue Range Primitive Area-Alpine district panel. <https://www.fs.usda.gov/recarea/asnf/recarea/?recid=75388>. (accessed 31 December 2018). Therefore, the Blue Range Primitive Area is included in any general discussions about wilderness areas in this dissertation.

<sup>59</sup> USFS notes that many credit the preserved wilderness state of the Gila to the Apaches as their presence in this isolated area significantly contributed to keeping it unsettled and intact ---. 2018c. The Gila Wilderness. <https://www.fs.usda.gov/recarea/gila/recreation/recarea/?recid=4827>. (accessed 31 December 2018).

conditions.<sup>60</sup> Extractive activities are generally forbidden, but can include grandfathered mining and grazing operations (USDA Forest Service 2018f). The designation of wilderness areas as places where humans are “visitors” has protected wildlands from what most certainly would have been complete exploitation, but it also reinforces the stipulation that humans are not part of nature, a concept that many argue is a root cause of human environmental destruction (White 1967; Merchant 1989; Wright 1992; Roszak 1992; Shepard 1995; Cronon 1995a; Harrison 1996). Other public lands, though still garnering significant environmental protections (with the exception of Department of Defense lands) have not been sanctified in the way that wilderness areas have been, and some have been managed heavily on economic terms.

In conservation, utilitarian values have been more powerfully leveraged than aesthetic values, resulting in a comparatively small amount of protected wilderness when viewed in contrast to other public land designations. Out of the roughly 28% of American Lands remaining in the public trust, just over 17% (or about 4.8% of the total area of the U.S.) is designated wilderness area. By far the most American wilderness (52%) is in

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<sup>60</sup> The Wilderness Act Defines wilderness explicitly as: “A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.” U.S. Statutes at Large. 1964. An Act to Establish a National Wilderness Preservation System for the Permanent Good of the Whole People, and for Other Purposes. In 88-577, ed. 48th United States Congress, 32-22. Boston: Little, Brown and Company.

Alaska. The rest is nearly all in the contiguous American West.<sup>61</sup> This presents an inverse value-protection relationship in which wilderness areas valued for their (lower power value) aesthetics, receive the highest level of federal protection, suggesting that aesthetic value is perceived as a luxury. While luxuries are coveted, they are also perceived as expendable, and defense of American wilderness against increasing economic interests is a significant present-day contention. The uneven distribution of wilderness results in issues of scale when it comes to management of public lands and wildlife. Because public lands and wildlife are national assets, stakeholder input on their conservation and management is not strictly localized.

Wilderness areas are located within national parks, national forests, national wildlife refuges and on other public lands, thus the management of wilderness falls to the NPS, Forest Service (FS), Fish and Wildlife Service (FWS), and Bureau of Land Management (BLM). Multiple agencies can be involved in management of single wilderness areas because wilderness value today is recognized as far more than aesthetic. From an ecological perspective, wilderness areas are some of the country's most valuable public lands, as they remain the last refuge for numerous species pressured by human development and the headwaters for important riparian systems (USDA Forest Service 2018f). A primary objective of wilderness area management today is conservation of endangered species.

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<sup>61</sup> There are now over 109 million acres of public lands designated as wilderness. Of the contiguous western states, California holds 14% of American wilderness, and the study area for this dissertation holds 6%: Arizona has 4% (4,512,056 acres) and New Mexico has 2% (1,698,604 acres). The eastern states and Hawaii hold 1% or less. Wilderness Connect. 2017. Wilderness statistics reports: Wilderness acreage by state. <https://wilderness.net/practitioners/wilderness-areas/summary-reports/default.php>. (accessed 9 March 2019).

### 3.4 Designation and Management of U. S. National Forests

By the late 19th century, as the U.S. was recovering from the Civil War, mining, timber and livestock operations were spreading across the West (Williams 2005). Timber companies, having cleared most of the eastern forests, had begun clearcutting the forests of the West. Railroad companies, leveraging large Congressional land grants, expanded rapidly across the West moving timber, minerals, and people, and connecting wilderness with major population centers (Williams 2005). Congressional concern about the welfare of public lands was prompted by George Perkins Marsh who warned in 1864 of unsustainable resource extraction and argued for preservation of wildlands in primitive condition in the interest of planetary sustainability (Nash 2001 org. 1967). Reports from surveyors John Wesley Powell and F. V. Hayden recommending conservation of the arid Southwest and Yellowstone respectively, and the photography of several prominent landscape photographers capturing the beauty and the fragility of newly acquired American lands, garnered congressional attention.

Federal management of American forests began in 1876 when Franklin B. Hough, was appointed by the U.S. Department of Agriculture, to assess American forests for quality and condition. Hough's study and a series of other studies recommended that forest lands not already homesteaded remain in the public domain (Williams 2005).<sup>62</sup> In 1891, a one-sentence rider was attached to the Forest Reserve Act authorizing the President to declare certain public lands as forest reserves (U.S. Statutes at Large 1891),

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<sup>62</sup> Arborist Charles Sargent recommended that forests be temporarily withdrawn from homesteading use and militantly protected, but Pinchot determined it was a political impossibility. Williams, G. W. 2005. The USDA Forest Service: The first century. Washington DC: United States Department of Agriculture Forest Service.

and this Act was used to declare the Yellowstone Park Timberland Reserve in 1872 (Williams 2005). Subsequently, numerous other reserves were declared. Despite reserve designations, reserves continued to be heavily exploited (Nash 2001 org. 1967; Williams 2005). Demand for definition of the purpose of forest reserves eventually led to the Organic Act of 1897 which established reserve management. In 1905 Roosevelt transferred the care of forest reserves to the newly established U.S. Forest service under the leadership of Gifford Pinchot, at which time forest reserves were renamed “National Forests (USDA Forest Service 2018e).

Though some early national forests were set aside for their aesthetic beauty, Pinchot had a conservationist attitude toward forest management. He wanted the most land for the most people, and his ultimate aim was to sustain the resource potential of those lands. Mining, timber extraction, and livestock grazing were allowed in national forests under managed guidelines. Railroads were extended to support these operations. Tourism and recreation in national forests increased significantly in the 1920s as affluence and leisure time increased. Today national forests and grasslands are managed for multiple uses including timber, recreation, minerals, water, and grazing. Wilderness and wildlife protection for the sake of biodiversity conservation were not explicit goals of national forests in early years of establishment as the scientific concepts of ecology and biodiversity were not developed at the time. However, today’s Forest Service goals include biodiversity conservation through wildlife and wilderness conservation.<sup>63</sup>

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<sup>63</sup> Early conceptions of what would later become the science of ecology did exist but did not have scientific currency until later in the 20th century. Likewise, early recognition of threatened species existed, and was what prompted the 1903 establishment of Pelican Island as a wildlife refuge. FWS. 2018c. Pelican Island. [https://www.fws.gov/refuge/pelican\\_island/about/history.html](https://www.fws.gov/refuge/pelican_island/about/history.html). (accessed 4 June 2019). However, the concept of biodiversity had not yet emerged.

### 3.5 Designation and Management of U. S. National Parks

Like wilderness areas, early national parks (including Yellowstone, Yosemite and Sequoia) were established to protect areas of great aesthetic beauty from rapid frontier expansion that was occurring in the 19<sup>th</sup> century (Schelhas 2010). With increased development, concern rose amongst leaders including Roosevelt, that the frontier experience would be lost and that without it, American character would erode. Frederick Jackson Turner captured the connection between Americanism and the frontier in 1893:

“...to the frontier the American intellect owes its striking characteristics. That coarseness and strength combined with acuteness and inquisitiveness; that practical, inventive turn of mind, quick to find expedients; that masterful grasp of material things, lacking in the artistic but powerful to effect great ends; that restless, nervous energy; that dominant individualism, working for good and for evil, and withal that buoyancy and exuberance which comes with freedom—these are traits of the frontier, or traits called out elsewhere because of the existence of the frontier (Turner 2019 org. 1893).”

The idea for national parks was part of the progressivist movement to provide a broad public benefit to American people (Schelhas 2010). In contrast to national wilderness, national parks were constructed to provide a managed visitor experience that revived the frontier spirit and provided opportunity for building American character by strengthening national values such as freedom, optimism, and self-reliance. The first NPS director, Stephen Tyng Mather referred to the parks as “vast schoolrooms of Americanism (West Sellars 1997, 88).”

The purpose of national parks fell somewhere in between national wilderness,

which was to be kept pristine and managed little, and national forests which were to be utilized and managed for resource. Designation of early national parks was justified on the pretense that the lands had no extractive usefulness and that their greatest economic value was in preserving their spectacular scenery for tourism (Nash 2001 org. 1967; Runte 2010 org. 1947). Utilizing what Schelhas calls “subtle utilitarianism (6)”, public support for national parks was generated through alliances granting railroads and other corporations monopolies on tourist facilities. Throughout its history, the NPS has actively developed tourism in parks through building resorts, enhancing transportation, and partnering with outdoor groups and tourism industries (Schelhas 2010).

Early national park use was by the upper class mostly traveling by train, but rising American affluence and industrialism in the 20<sup>th</sup> century generated more leisure time for a broad social stratum, and the increasing availability of automobiles made park excursions possible for more people (Schelhas 2010). Nevertheless, national parks were created with a narrow vision of “public”, which generally excluded American Indians, minorities, and the urban poor (Schelhas 2010).<sup>64</sup> Many national parks (perhaps all) sit on land that was taken from Indians when they were forced onto reservations (Morehouse 1996). Yellowstone, for example was established from lands that belonged to Shoshone, Bannock, Blackfoot and Crow tribes (Gottlieb 1993; Kantor 2007).<sup>65</sup> Indian occupation

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<sup>64</sup> I use the term American Indian (hereafter referred to as Indian) throughout this dissertation to refer to indigenous people located in what is now the contiguous U.S. However, I recognize this term as a broad and greatly over-simplified ascribed identity that has been adopted by tribal groups and individuals to a limited degree. Generally tribal members prefer to be referenced by their specific tribal identities. When referring to individual tribes or tribal members, I reference specific tribal associations.

<sup>65</sup> Gottlieb notes that the establishment of Yellowstone as a national park generated increased interest in the plight of Indians. Gottlieb, R. 1993. *Forcing the Spring: The Transformation of the American Environmental Movement*. Washington, D. C.: Island Press. A rising interest in Indian culture eventually led to the Antiquities Act.

was considered incompatible with national parks and conservation leaders, including John Muir, advocated for Indian removal (Kantor 2007). After park establishment, Indians were deliberately excluded from Yellowstone, Glacier, and Grand Canyon National Parks (Spence 1999). In the case of Yosemite, Indians were granted a moral right to remain, but their hunting rights were taken and their occupancy rights were gradually chipped away, making their moral right ineffectual (Spence 1999). Dayton Duncan, who co-wrote and produced with Ken Burns the documentary film *The National Parks: America's Best Idea* (Burns and Dayton 2009) calls national parks “the Declaration of Independence expressed on the landscape” and argues that Americans were “the first in the history of mankind to say that the most special places should be set aside not for royalty, not for the rich, not for the well-connected, but for everyone and for all time (Trejos 2016)”.<sup>66</sup> Duncan’s statement reflects a common, but colored perspective on American national parks. There is in fact, much history in protection and honoring of special places independent of wealth and class in the history of mankind (in particular in pre-Christian times), and Indians historically and presently recognize sacred spaces; many which now sit inside national parks that Indians were expelled or excluded from.

Whereas wilderness offers unstructured experience and discovery, national parks offer managed learning experiences in immersive museums of nature. Visitors can stay in resorts and drive on paved roads where they can stop at designated spots deemed

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<sup>66</sup> The film’s title is a reference to Wallace Stegner’s famous 1983 statement: "National parks are the best idea we ever had. Absolutely American, absolutely democratic, they reflect us at our best rather than our worst." NPS. 2018. Famous quotes concerning the National Parks. <https://www.nps.gov/parkhistory/hisnps/NPSThinking/famousquotes.htm>. (accessed 27 September 2018).



especially scenic. One can take in the “official” landscape through one of the viewing scopes cemented into the ground that beg: “Look here. See this”. Parks were conceived as “national playgrounds (57)” rather than forests, and since their beginnings the NPS has sought to preserve a scenic façade of nature to be viewed in serenity (West Sellars 1997).

Mather pushed for pastoral scenes of wild animals grazing in “undisturbed majesty and serenity (70)”, and argued that the ruthless, bloody or ugly parts of nature had no place in a pastoral scene (West Sellars 1997). To this end, predators were deliberately exterminated from national parks. For NPS Director Horace Albright, predators were species that preyed on “animals that add so much to the pleasure of park visitors (West Sellars 1997, 72)”. Even small and non-threatening predators were eliminated if they competed with the NPS’ tranquil excursion agenda. For example, otters at Yellowstone were killed because they were eating trout that were popular for sport fishing (West Sellars 1997).

The NPS actively manages wildlife and landscapes in parks, partly due to habitat fragmentation and the absence of top predators, which has made roundups necessary for culling of ungulates (NPS 2018e).<sup>67</sup> Wildlife management in parks is designed to serve the NPS’s primary agenda of providing a premium tourist experience. To this end, NPS has continually introduced favored plants and animals and removed undesirables to maximize visitor experience, even when it involves introducing non-native species (West Sellars 1997).

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<sup>67</sup> Despite the promise of ecological balance offered by wolf reintroduction, the decision to reintroduce wolves into Yellowstone National Park in 1995 was largely controversial due to the pretense that National Parks are for people, and that wolves do not belong in a place where people go.

Given that national parks were established for the white American experience, the determination of a good visitor experience has been contextualized accordingly. For example, Theodore Roosevelt National Park in North Dakota had bands of Indian horses roaming the land for decades prior to park establishment. The horses are descended from horses owned by the Lakota and Dakota tribes in the 19th century, which were taken when they were relegated to reservations. They have knotty manes and tails, short legs, big feet and gray-blue coats.<sup>68</sup> The park actively manages wild horses as livestock and introduced quarter horses, an Arabian, and a part-Shire bucking horse in order to make the park's drab and stocky Indian ponies more attractive to European American tastes and to improve their sale value at public auctions (McLaughlin 2011).<sup>69</sup> The fact that the park maintains a herd of prettied up "Indian horses" is illustrative of how Indians have been ornamentalized in national parks.

Historically, national parks were designated for their natural scenic beauty and national monuments for their cultural value (NPS 2018a). However, the NPS oversees both national parks and national monuments, and the Antiquities Act is often used to

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<sup>68</sup> The phenotype is "blue roan" and is a mottled grayish blue color that was not considered attractive.

<sup>69</sup> The NPS has an exemption to the Wild Free-roaming Horses and Burros Act of 1971 that maintains wild horses and burros be protected. There is a complex story attached to these horses which I cannot cover in this dissertation, but in short, the blue roan color is distinct to Indian horses in the northern plains region. These horses were and remain extremely important to Lakota and Dakota culture and are woven into their historical narrative. The possession and subsequent management of their traditional horse stock has been culturally and materially devastating to these plains Indian tribes. Defender Wilson, M. L. 1998. *Nokota horse history*. ed. Anita Hagy Ferguson.

designate a national monument as a holding place for a national park.<sup>70</sup> The institutional split between culturally and scenically important lands reflects the persistent influence of the philosophical split between human and nature. While there are practical reasons for managing scenic and cultural sites differently, (i.e. the need to preserve cultural artifacts or ancient ruins may require particular management expertise), many places of scenic beauty and environmental importance have historically been the place of sacred sites or traditional resource extraction. In other words, these places became important cultural sites *because* of their natural attributes. All cultural sites sit within Nature. Distinguishing scenic sites from cultural sites implies that there are human occupied places and there are places occupied by wild things and that these places are separate, except for when they are visited or trespassed.

The unlikely setting aside of protected public lands concurrent with a push to acquire and develop new lands occurred because lands proposed for protection were not considered valuable for settlement or resource extraction. They consisted primarily of high or rugged territory, valued amongst decision makers mostly for scenery (Schelhas 2010). The unfortunate backlash of setting aside of islands of wild and scenic American lands was *defacto* permission for continued exploitation of non-protected lands for agriculture, grazing, mining, hunting, fishing, timbering, urbanization, military exploitation or other kinds of development, extraction and use.

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<sup>70</sup> While many national parks started out as reserves or national monuments by presidential decree, private or community based conservation efforts often preceded federal level conservation. Schelhas, J. 2010. The U. S. national parks in international perspective: The Yellowstone Model or conservation syncretism? In *National Parks: Vegetation, Wildlife and Threats*, eds. Grazia Polisciano & Olmo Farina. Hauppauge, NY: Nova Science Publishers.

Conservation wise, the deserts of the Southwest did not fare as well as the forests. While some appreciated natural and cultural wonders of the desert were protected, for example, The Grand Canyon and Casa Grande Ruins in Arizona, the desert flatlands were largely overlooked for protection. The deserts in the 20<sup>th</sup> century were, and by many still are, perceived as wastelands (Sheridan 2012 org. 1995; Davis 2016).<sup>71</sup>

The setting aside of large tracts of public land designated for particular uses is distinctly American. The American model of conservation has been successful in providing relative protection of vast public lands that arguably would have otherwise been fully exploited. For these reasons the American model has been highly influential in establishing a global standard for protection of lands and wildlife (Schelhas 2010). However, the model is based on privilege and excess, and its successful reproduction outside the U.S. is questionable.

When the model was established in the U.S., the country had the benefit of excessive amounts of newly acquired, ecologically stable, abundant, and largely undeveloped lands that were perceived as vacant. These frontier lands were treated as vacant because they were vacant of white Americans (Kantor 2007).<sup>72</sup> With the wellbeing of a singular white demographic the sole consideration, the decision-making power resting solely with a white American government, and an abundance of “vacant” land to

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<sup>71</sup> I investigate the challenges of Sonoran Desert conservation in an ongoing research project, summarized in Appendix I.

<sup>72</sup> Though it was acknowledged that Indians occupied the lands, Indians were not given equal human status to European Americans and had little to no governmental power in decision making. Late 9<sup>th</sup> and early 20<sup>th</sup> century public land conservation was led by a group of affluent white men, and while some leaders advocated kind treatment of Indians, equality was not under consideration and Indians were in many ways managed like livestock.

play with, the practice was to eject Indians from lands and divide the lands to serve the different needs of the white American public (Kantor 2007).

In contrast, most outside the U.S. that have attempted to apply the American model have done so on smaller scales with less total land to work with, smaller individual tracts of land, deteriorating ecosystems with fragmented habitats, species in crisis, greater cultural and social diversity under consideration, and in many cases deteriorating or unstable economic and governance conditions (Schelhas 2010). Strict nature protection is a luxury that many developing countries cannot invest in because they do not have the requisite land, resource bounty, funding, or governance structure.<sup>73</sup> The American model has been criticized internationally for its culturally insensitive, Eurocentric, exclusionary and protectionist framing (Schelhas 2010), which conceives Nature as vacant and objectifies it as something to be set aside for specialized human experience. The notion of vacant lands is a concept that has been interpreted numerous ways to manipulate people, wildlife, and lands in the U.S. for both conquest and conservation.

### 3.6 The Frontier, Public Lands and the Making of Vacancy

Don Mitchell argues that a robust landscape theory should include theory that encompasses the material complexity of capital, race and gender, geopolitics and power, and be supported by integrative evidence that includes the ugly part of history (Mitchell 2003). The ugly side of the celebration of the frontier and the designation of protected

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<sup>73</sup> As U.S. population and development increases, public lands are increasingly compromised, and arguments are frequently presented to increase resource extraction or development on public lands or to dispose of public lands to states which generally sell the lands for development.

public lands is best exemplified by the removal of Indians from their ancestral lands, the systematic destruction of Indian culture, and the tragic suppression of Indian philosophies, ethics and worldviews that would have made enormous contributions to conservation were it not for persistent oppression of Indians.

Oppression of Indians was predicated by the European colonial concept of *terra nullius* (nobody's land) (Miller 2011). The concept of *terra nullius* is part of the Doctrine of Discovery, which held that land could be legitimately acquired by unilateral possession on the basis of first discovery and effective occupation.<sup>74</sup> First discovery was contextualized as "first European discovery", and effective occupation of lands was typically interpreted by European standards as farmed, irrigated, built out, or otherwise permanently settled the land (Miller 2011). Development of lands was central to claiming title to lands (Miller 2011). Indigenous people of newly "discovered" lands including the Americas were often described as savage and sometimes relegated to subhuman status in order to justify suppression of their rights to land (Nash 2001 org. 1967; Miller 2011). Some Indian tribes were nomadic hunter-gather groups or groups that practiced swidden agriculture or fire clearing and thus moved settlements quickly allowing lands that were previously worked to regrow (Stewart 2002).<sup>75</sup> The perceived savage nature of indigenous groups, combined with their lack of permanency in particular places, made

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<sup>74</sup> The principle of *terra nullius* dates back to the Roman Empire but was heavily applied in the European colonial period, and is still applied today as the Doctrine of Discovery remains international law. Miller, R. J. 2011. American Indians, the Doctrine of Discovery, and manifest destiny. *Wyoming Law Review*, 11, 329-349.

<sup>75</sup> Omer C. Stewart theorizes that Indian fire clearing created many American grasslands. Stewart, O. C. 2002. *Forgotten Fires: Native Americans and the Transient Wilderness*. Norman, OK: University of Oklahoma Press.

them essentially “nobody” in “nobody’s land”, and European settlers obtained vast land holdings by globally applying this “finders-keepers” mindset.

Early European settlers in the U.S. acknowledged Indian occupation of eastern lands, as they were farming and living in settled communities, so the principle of *terra nullius* could not be legitimately enacted in the colonial U.S.<sup>76</sup> This meant that Indian claims to lands had to be cleared before European possession could take place. Barring *terra nullius*, possession could take place by persuading Indians to submit to European authority, by purchasing the land or the rights to settle it, or by conquest (Carlson 2011). Alexis de Tocqueville stated: “North America was still literally an empty continent, a wilderness awaiting settlers (Tocqueville 2004 org. 1835-1840, 323)”. This statement reflects the perception of *terra nullius*, even though it could not be legitimately executed in the colonies. It also reflects the perception of wilderness as being nothing until Europeans came and made something out of it, thereby negating the idea of wilderness as a thriving place inhabited by many lifeforms.

Relations with Indians were important to early settlers as militantly strong tribes made formidable enemies or strong allies for competing European colonies. In lieu of taking possession of lands by force, formal treaties were drawn up to address land claims (Carlson 2011). Ultimately, many of these treaties were broken or diluted over time, and when Indians refused to further negotiate their lands, they were forcibly removed from

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<sup>76</sup> By comparison, European possession of aboriginal lands in Australia in the late 18th century was largely enacted on the principle of *terra nullius*. In 1992 the High Court of Australia voided *terra nullius* in *Mabo v. Queensland*, and has initiated a belated reconciliation. Carlson, L. 2011. Similar societies, different solutions: United States Indian policy in light of Australian policy towards Aboriginal peoples. In *Economic Evolution and Revolutions in Context: Historical Approaches to Social Science*, eds. Paul W. Rhode, Joshua L. Rosenbloom & David Wieman. Stanford, CT: Stanford University Press.

them. One famously calluses dispossession occurred under the Indian Removal Act of 1830. Under this Act, U.S. Presidents Andrew Jackson and Martin Van Buren authorized the militant removal of Cherokee from their native lands in order to make the lands available to white settlers for cotton farming. They did this under the rhetorical pretense of saving the tribes from cultural destruction. In 1833, 16,000 Cherokee were forced to walk 1000 miles to relocate in the wilderness west of the Mississippi River. Four thousand Cherokee died on this march known as the Trail of Tears (Hicks 2011). Approximately 50,000 Indians were removed from their native lands via treaty or force by the end of the Jacksonian administration in 1837, which created millions of acres of “vacant” land for white settlement, and a solid foundation for a slave-based economy (Office of the Historian 2018).

Prior to 1848 when the Southwest was acquired, the great plains *were* the American West, and Indians were primarily relocated to this unsettled area. However, white settlers moved in within a few decades of Indian relocation, exacerbating tensions over dwindling lands and resources. The Indian Appropriations Act (U.S. Statutes at Large 1851) authorized the creation of separate Indian areas, which became the basis of the Indian Reservation System. Indians were forced onto reservations located largely in the undesirable desert. Large land grants under The Homestead Act were comprised of lands forcibly ceded by Southwestern tribes (Bradsher 2012). These lands were *made vacant* by Indian removal and then were granted for settlement by non-native people under the Doctrine of Discovery.

While physically removed from their ancestral lands, Indians remained culturally connected to their traditions, philosophies and spirituality, and they remained attached to



their ancestral lands through narrative shared in their native languages. The persistence of Indian culture, and the binding of culture to lands was perceived as a threat to colonialism. Extensive efforts were made to systematically detach Indians from the cultures that tied them to the lands that had been taken from them. From the mid-19th through early 20th centuries structured disintegration of Indian cultures began with an agenda to extinguish Indian ideologies and traditions.<sup>77</sup>

Children were taken from reservations and placed in Indian boarding schools. They were forced to cut their spiritually symbolic long hair, wear European style clothes, speak English, and learn Christian scripture (Lindauer 1998).<sup>78</sup> Recommendations for these schools are outlined in a patronizing 1852 report that refers to Indians as “somewhat in the condition of minors and wards under the guardianship of the Government (Wilson 1852) (35)”. These schools, like the Indian Removal Act, were established under the pretense of saving the Indian; this time through conversion rather than relocation. Reformer, Captain Richard Henry Pratt, arguing for forced conversion of Indians, stated in 1892: “all the Indian there is in the race should be dead. Kill the Indian in him, and save the man (Pratt 1973 org. 1892, 260)”. Indian schools superintendent John Oberly asserted in 1888 that the aim of the schools was to divorce Indians from their

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<sup>77</sup> Less extensive assimilation efforts existed before reservations. George Washington, believing Indian society was inferior, initiated efforts to “civilize” Indians by encouraging their adoption of European social structures, customs and farming practices. Bryan, D. 2012. The Cherokee acculturation. <https://www.americanhistoryusa.com/the-chokeee-acculturation/>. (accessed 31 August 2019).

<sup>78</sup> Similar British cultural annihilation programs were carried out in Australia, Canada and New Zealand through the 20<sup>th</sup> century. Controlling society through controlling child welfare was Poor Law policy in Britain (which separated poor children from their parents), and child welfare was considered a “soft” tool for obtaining compliance and acceptance of British rule amongst aboriginal people. Armitage, A. 1995. *Comparing the Policy of Aboriginal Assimilation: Australia, Canada, and New Zealand*. Vancouver, BC: UBC Press.

collectivist perspective and align them with American egotism so that a student “would say ‘I’ instead of ‘we’, and ‘this is mine’ instead of ‘this is ours’ (Lindauer 1998).

The systematic effort to destroy Indian culture was based on the idea that Indians, following Adam Smith’s four stages of history (Smith 2002 org. 1776), were at the lowest and rudest stage of human social development and represented the worst of humanity (Meeks 1976). In a letter to New York Indian Commissioner James Duane, George Washington argued it was best to negotiate with the Indians rather than take their lands by force because they were essentially beasts of prey:

“... attempting to drive them by force of arms out of their Country; [which] as we have already experienced is like driving the Wild Beasts of the Forest which will return to us soon as the pursuit is at an end and fall perhaps on those that are left there; when the gradual extension of our Settlements will certainly cause the Savage as the Wolf to retire; both being beasts of prey though’ they differ in shape (Washington 1783).

During the Romantic period the concept of the “noble savage” was popularized. This idea held that civilization was a corrupting force, and thus the savage was free of sin and therefore noble.<sup>79</sup> While the idea contextualized Indians as inherently good, it also positioned them as hapless outsiders and rested on the idea that Indians were primitive or infantile. This, along with dispossession, erosion of indigenous narratives and social systems, and cultural alienation, has distilled the diverse intellectual and spiritual Indian

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<sup>79</sup> The idea was popularized by Victor Hugo, Jean Jacques Rousseau, François-René de Chateaubriand, and James Fenimore Cooper, among others. However, the noble savage is a long-standing narrative character dating back as far as 2100 BCE, as Gilgamesh’s Enkidu is characterized as a such. I illustrate this in Chapter Five.

philosophies and practices into a single summation, which has been oversimplified, romanticized, misunderstood, and appropriated, not the least by the environmental movement, which has portrayed Indians as noble savage environmentalists and victims of urbanization (Taylor 1997; Gilio-Whitaker 2017). For example, Chief Seattle’s famous environmental speech is of questionable origin, having been doctored and reinvented numerous times (Zussy 1993; Center for the Study of the Pacific Northwest 2018).<sup>80</sup> Generation X or older Americans are also likely to remember “Iron Eyes Cody”, the tearful Indian in an anti-littering public service announcement, who was actually Italian American actor Espera DeCorti (Dunaway 2015).<sup>81</sup>

Indians did and do have alternative conceptions of the wild. Many Indian tribes have animic or totemic ontologies which inspire conceptualization of the wild as a part of the person, and wild animals as kin. Though Indians did impact and manage lands, they were generally more “hands off” with regard to control of the wild. Many Indian cultures conceive the environment as sacred or recognize especially sacred places within the larger sacred environment, and belief in sacred places in nature has been linked to greater environmental awareness and concern (Greenberg and Greenberg 2013). While there is certainly credence to the recognition of Indians as victimized, and there is substance to the construct of Indians as environmentalists, Indian worldviews have been

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<sup>80</sup> No verbatim transcript of Chief Seattle’s famous 1854 environmental speech exists, but an inauthentic and significantly inconsistent version of the speech popularly adopted by environmentalists was written for a film script by Texas professor, Ted Perry, in 1971. Center for the Study of the Pacific Northwest. 2018. Texts by and about natives: Cometary. Two versions of Chief Seattle's speech. <http://www.washington.edu/uwired/outreach/cspn/Website/Classroom%20Materials/Reading%20the%20Region/Texts%20by%20and%20about%20Natives/Commentary/5.html>. (accessed 31 August 2019).

<sup>81</sup> The announcement was for the “Keep America Beautiful” campaign launched in March 1971 on the second Earth Day Anniversary.

oversimplified and romanticized. The western construct of environmentalism is not the same as Indian relationships with the land, and the oversimplified idea of a singular Indian worldview has perpetuated misunderstandings and unfair environmental stewardship expectations of Indians (Gilio-Whitaker 2017).

Portrayal of environmentalism as “primitive other” pushes the idea of legitimate connection with, or emersion in Nature further from industrialized society. Contextualizing the concept of environmental connection and stewardship as distinctly Indian invites Western appropriation or syncretization of Indian cultural myths, symbols, and rites, and situates thought and spirituality as fetishes that can be owned and commoditized. Generally speaking, Western thought has been dominantly anthropocentric, and while Christian thought has dominated the Western worldview, it has never wholly eclipsed other ways of perceiving and being in the world.

There are, in fact, pantheistic and panentheistic or nature-based worldviews, practices, myths, rites, and traditions of European origin, which acknowledge Nature as animate, body as vitally permeable, and humans as part of but not holding dominion over Nature (Scofield 2004). While these perspectives were driven into the margins by the Catholic Church in the Middle Ages, they have (mostly quietly) persisted (Adler 1986 org. 1979). Some of these orientations re-emerged (most significantly in the late 20<sup>th</sup> century) in various forms including New Age, Deep Ecology, Neo-paganism or other philosophies that reject dogmatic approaches to understanding the universe (or Universe) (Adler 1986 org. 1979).<sup>82</sup> To a certain degree, the relatively recent emergence of this

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<sup>82</sup> References to “pagan”, “paganism” or “folk religion” in this dissertation describe indigenous non-Abrahamic religious or spiritual traditions that existed in Europe prior to and concurrent with Christianity.

cultural fringe and the associated pantheistic and panentheistic worldviews was perceived as Indian appropriation (Taylor 1997).<sup>83</sup> While it is clearly important that specific practices, stories, rites and histories are respected of all cultures and properly attributed, it should be acknowledged that many cultures and subcultures share similarities in belief and thought. Worldview and thought itself are public domain (as is culture), so while worldviews and cultures can be possessed, they cannot be owned. Mutualist orientations are a necessary condition for the elevation of human consciousness and critically important to conservation success. For the sake of conservation, mutualist orientations should be adopted widely, and without reservation, and sensitivity to the nuances and diversity of affiliations with the landscape and wildlife should be integrated into conservation planning and intervention.

### 3.7 Conclusion

European narratives of power and privilege had a strong influence on early American conceptions of wilderness and wild animals. By extension, these narratives defined human and non-human value and belonging, which had a decisive impact on development, resource extraction and conservation of public lands, and a devastating effect on American Indians.

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<sup>83</sup> In some cases, individuals and groups *were* appropriating or syncretizing specific Indian rites, stories, and practices, often without attribution or with misattribution. For example, non-Indian spiritualists (and some actual Indians) capitalized on the popularity of Indian Shamanism in the 1980s-90s. Taylor, B. 1997. Earthen spirituality or cultural genocide?: Radical environmentalism's appropriation of Native American spirituality. *Religion*, 27, 183-215. However, the New Age, Deep Ecology and Neo-Pagan movements have much of their roots elsewhere.

Indians inhabited the landscapes of North America for 12-15,000 years before European conquest. There were estimated millions of Indians in hundreds of distinct cultures living in what is now the U.S. at the time of European colonization.<sup>84</sup> However, by 1900 virgin soil epidemics, warfare and dispossession had catastrophically collapsed Indian populations nationwide.<sup>85</sup> Living in oral cultures, Indians had (and still have) language traditions in which stories are not only told and heard, but experienced. Knowledge, wisdom and worldview are shared within and between generational narratives and define Indian ways of being, and these ways of being and meaning-making were crushed by colonialism (Duarte and Belarde-Lewis 2015).

The systematic destruction of Indian culture through dispossession and isolation suppressed alternative narratives of wildlife and the wild that acknowledged the interconnected and reciprocal qualities of Nature and positioned humans within a meshwork of life as opposed to atop a hierarchy of life. These alternative perspectives could have elevated conservation knowledge and ethical conservation practice long before scientists began to construct concepts of ecology and sustainability. Early American conservation was instead guided chiefly by the principle of human

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<sup>84</sup> There has been significant debate about actual pre-Columbian, above the Rio Grande population estimates. George Catlin estimated as many as ten million in 1830. Subsequent scholarly estimates have ranged from a low of 900,000 determined by Alfred Kroeber in 1934 and a high 18,000,000 determined in 1983 by Henry Dobyns. Low estimates account for the assumption that disease wiped out as much as 95% of the population, sweeping through Indian populations faster than the Europeans themselves, such that large numbers of Indians were dead before they could be counted by Europeans. Stannard, D. E. 1990. Disease and infertility: A new look at the demographic collapse of native populations in the wake of Western contact. *American Studies*, 24, 325-350.

<sup>85</sup> Crosby defined virgin soil epidemics as epidemics striking a population with no previous contact with the disease and little to no immunological defense. Crosby, A. 1976. Virgin soil epidemics as a factor in the aboriginal depopulation in America. *The William and Mary Quarterly*, 33, 289-299.

exceptionalism, which is also a foundational axiom in science and remains the dominant intellectual and methodological approach to conservation; a topic I cover in Chapter Six. The following chapter presents theory on the operation of narrative in culture and society.

CHAPTER FOUR  
NARRATIVE, METAPHOR AND EMOTION IN VALUE  
CREATION AND EXPRESSION

4.1 Overview

Perceptions are mediated and operationalized by narrative, which links lived experience to meaning and knowledge. Narrative is often expressed metaphorically, semiotically, and emotionally. Narrative manifests in behaviors and social structures, including wildlife conservation structures. This chapter presents theory on the operational aspects of narrative, metaphor, and emotion.

4.2 The Power of Narrative

It is through narrative that humans come to know the Self. Cognitive psychologist Jerome Bruner posited that while there is a paradigmatic function of the human brain that sorts information in a formal way through categorization, there is an equally active part of the brain that functions in a narrative way to make sense of intentions and actions, and this part of the brain is deeply connected to human consciousness (Bruner 1986).<sup>86</sup> Research in cognitive psychology shows that narrative is a kind of conceptual fabric on which the brain maps and connects data and sensation. Schema, cognition, beliefs, constructs and discourse are woven together through a continuing story that develops in

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<sup>86</sup> This is not to suggest the different parts of the brain operate separately, rather to emphasize that there are different brain functions that work together, such that emotional and rational responses are not created in isolation.



response to internal and environmental information and sensation to create an evolving Self (Kékesi 2017).

Narratives are essentially stories. Myths, fairy tales, legends, histories, personal accounts, and social discourse are all forms of narrative, as are visual representations including petroglyphic and pictographic scenes, paintings, photographs, and films. Intact narratives can be intentionally constructed by a single author, but narratives are also constructed non-consciously and in fragments. Agamben posits that ontology is “the fundamental operation in which anthropogenesis, the becoming human of the living being, is realized (Agamben 2004, 79)”. Our ontologies are our earliest narratives. Infants begin to initiate dialogues with caregivers relating to events, the environment, and stories they are told around age two, when autobiographical narratives constructed from world experience begin to build the inner world of the person (Kékesi 2017).

Autobiographical narratives are re-extended into the world where they mingle with other narratives as a type of culturally constructed discourse (Bruner 2001). Narrative meaning is drawn from connections between individuals and their environment. It is produced and maintained through language and imagery, and it has shared meaning in societies, communities or cultural groups. Narrative is constantly becoming in relation to sensations, emotions, material actions, environmental conditions and forms of discourse. Thus, it evolves as individuals, cultures, social structures, and physical environments change. Pioneering narrative theorist, Walter Fisher, asserts that the narrative paradigm insists that all forms of communication are episodic in the story of life, and that “any instance of discourse is always more than the individuated forms that may compose it (Fisher 1985, 347)”.

Culturally constructed meaning preserved in narratives influences individual thought and behaviors (Fireman, McVay and Flannagan 2003). As meaning is preserved in stories, individuals may draw causal links from one narrative to the next in a constantly evolving “meaning-making” exercise in which individuals make sense of the changing world (Fireman et al. 2003). Narrative meaning becomes embedded in rules and norms (Fireman et al. 2003), is invoked in political and social discourse, and can influence “groupthink” and social action.<sup>87</sup> Race and gender constructs, for example, are grounded in narrative and perpetuated by social embeddedness. The product of narrative is everywhere, though individuals may not be cognizant of it (Polkinghorne 1988).

Narrative is not merely descriptive, it is *prescriptive*. Narratives do not need to be “true” in order to be materially realized. German philosopher Hans Vaihinger argued that people cannot truly know reality, so they construct fictional models for worldly phenomena and then behave “as if” the world matches those models (Vaihinger 2015 org. 1925).<sup>88</sup> People structure their lives around empirically unverifiable social constructions, even in the face of unequivocal evidence contradicting those constructions. For example, in biblical narrative, the desert was constructed as barren, and metaphorical references to the desert “blossoming as the rose” guided settlement in the deserts of the Southwest. These narratives grounded the rationale for reclamation of water in the desert. Intensive

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<sup>87</sup> The term “groupthink” was coined by Walter H. Whyte Jr., and the theory of groupthink was developed by Irving Janis. Groupthink theory holds that the desire for harmony or conformity in the group can result in irrational or dysfunctional group or individual decisions. Janis, I. 1971. Groupthink. In *Psychology Today*, 84-90.

<sup>88</sup> Hans Vaihinger’s 1925 *The Philosophy of the “As-If”* was a pioneering work, informing theory of social construction and cognitive dissonance, though the terms were coined by later theorists.

development and harnessing of water in Southwestern deserts continue despite overwhelming evidence that desert urbanization is unsustainable.<sup>89</sup>

Contrary to computational theories of the brain, the embodied approach of contemporary cognitive science holds that body is not peripheral to mind. As Kékesi puts it: “Mind is not a software which is running a hardware (body) (Kékesi 2017, 3).” Rather, narratives arise from lived experience, are mapped by the brain, and are tethered to feeling, senses and emotions (thus embodied), such that the Self is an expression of narrative thinking rooted in the emotional and psychological aspects of human being (Kékesi 2017). While an embodied agent, the self is not strictly a subject, because the embodiment of the Self is extended. Bruner (2001) holds that the self is both subjective and intersubjective and is thus distributed in the way that knowledge is distributed. Narrative is an animating force, as it is through narrative distribution that self-making is also world-making (Bruner 2001).<sup>90</sup> Individuals and cultures are constructing multiple narratives concurrently and attempting to make sense of them together.

Bruner (1986) asserts that the conduct of action is influenced by intentional states, such as beliefs, desires and emotions, which were historically meshed into culture and society through the narrative mode (Bruner 1986). He argues that the narrative mode empowered people to subjunctivize the world: to see the aspects of world as mutually

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<sup>89</sup> Reference to the literal application of the biblical passage “The wilderness and the solitary place shall be glad for them; and the desert shall rejoice, and blossom as the rose (Isaiah 35:1)”. The Holy Bible. 2000a. The Holy Bible, King James Version. In *Bartleby.com*, ed. The American Bible Society. New York: American Bible Society.

<sup>90</sup> Bruner attributes Western resistance to this view to the Western commitment to the individual. Bruner, J. 2001. Self-making and world-making. In *Narrative and Identity: Studies in Autobiography, Self and Culture*, eds. Jens Brockmeier & Donal Carbaugh, 25-37. Amsterdam: John Benjamins Publishing Company.

contingent. For Bruner, narrative opens the world up to human possibilities as opposed to settled certainties (Bruner 1986). Following Bruner's proposition, Brockmeier and Carbaugh (2001) argue that narrative imagination is a form of agency because it allows for multiple contexts of meaning and perceptions of time mode (including perceptions of causality) thereby facilitating multiple realities with multiple possibilities (Brockmeier and Carbaugh 2001). The fluid narratives that define individuals, cultures and societies are significant in the formation of human relationships with wildlife and the natural environment.

### 4.3 Metaphor

While metaphor can be recognized as a phenomenon of language, it is also a phenomenon of mind, culture, and society (Cameron and Low 1999), and analysis of metaphor in individual narratives can provide insight into an individual's otherwise unexpressed values, beliefs, and assumptions (Steger 2007). Metaphor operates not only as structural analogy that is intellectually formed, but as a way of expressing mental interactions and feelings, or the phenomenal qualities of the mind (Barnden 1997). Lotman (1990) conceived metaphors as a bridge between verbal and visual spheres (a bridge between discrete linear signs and non-discrete visual space), and a mechanism for expressing content that language alone could not (Noth 2006). Thus, metaphoric analysis can be used to access the individual interior domain of personal experience and the collective interior domain of shared experience.

Metaphors are figures of speech in which the qualities of one thing, idea or phenomena are transferred linguistically to another. While use of metaphor is a form of

linguistic abstraction, metaphor functions to provide clarity and enable understanding. Aristotle conceived metaphor as the result of perception, and posited metaphor's purpose other than as a poetic device was to help learning be an easy, and pleasant experience, and thus a useful rhetorical tool for shaping what other people think (Aristotle 2004 org. cir 350 BCE). Despite Aristotle's acknowledgement of metaphor as a rhetorical tool, the simplification of metaphor as a poetic device for decorative language dominated metaphor research through the first half of the 20<sup>th</sup> Century when the advent of computers prompted the analogy of the human mind/brain as a computer, which had a strong influence on cognitive psychology, and by extension, metaphor research.

The mind/brain-computer analogy represents the brain as an information processor that takes in information from the environment, processes it, and transforms or alters it systematically to produce outputs. This analogy presents a limited conception of the human brain as it does not take into account that the brain performs extensive parallel processing and that cognitions are influenced by complex, and sometimes conflicting, emotional and motivational factors and other inputs from a constantly changing world (Braga 2017). Further, human intelligence is not housed entirely in the brain or strictly based on logic and computation. Rather, it encompasses tacit, folk, emotional, and procedural knowledge acquired through a condition of conscious being (Braga 2017). Artificial or computational intelligence technology has struggled to predictably replicate common-sense human tasks because even common-sense tasks require a great deal of

contextual knowledge and reasoning (Poole, Mackworth and Goebel 1998).<sup>91</sup>

Nevertheless, this analogy underscores the information-processing paradigm of psychology that remains influential in cognitive linguistics research (Cameron and Low 1999; Harmon-Jones 2009; Epstein 2016; Vlasits 2017).<sup>92</sup>

In *Metaphors We Live By* (1980), George Lakoff and Mark Johnson established conceptual metaphor theory, the idea that people use metaphor not just to talk about life, but to make sense of it (Lakoff and Johnson 1980).<sup>93</sup> They proposed that conceptual domains are mapped in alignment with neural mappings in the brain, such that metaphors are fundamental to human reasoning, reflecting a metaphoric human thought process used to make sense of complicated worldly phenomena (Lakoff and Johnson 1980, 6).

Baldwin et al. (2017) found that metaphors can create meaning in peoples' lives because metaphor is an assemblage of knowledge acquired over years of routine bodily activity, which one maps onto other aspects of life, creating a web of meaning entangled with experience (Baldwin, Landau and Swanson 2017). Use of metaphor can increase perceptions of continuity in experiences and identities separated in time and place (Landau et al. 2014), and mapping of metaphor enables an individual to conceive of life as a journey, or travel on a path marked by goals and obstacles (Baldwin et al. 2017).

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<sup>91</sup> The “mind as a computer” metaphor is flawed as the human mind/brain can’t logically be analogous to something created by the human mind/brain. The salient analogy is backwards, as a computer can be said to perform some functions like a human brain, but the human mind cannot accurately be said to function like a computer.

<sup>92</sup> The metaphor conceiving the human as a machine, ironically exists in tandem with the persistent narrative that humans are separate from, and superior to the non-human animals that Descartes called machines.

<sup>93</sup> A conceptual metaphor is a metaphor that functions to make an idea from one conceptual domain understood in terms of another. They can be of an orientational, structural, or ontological nature, and they can be idiomatic or cliché. Lakoff, G. & M. Johnson. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press.

Individuals use metaphor to represent their core self-concept, which more public self-concepts encompass (Landau et al. 2011; Schlegel, Vess and Arndt 2012), and they use metaphor to mediate uncertainty of self-concept (Baldwin et al. 2017).

#### 4.4 Emotion

Lakoff and Johnson (1980) argue that the sources of emotional metaphors are typically bodily experiences (Lakoff and Johnson 1980). Kövecses (2010) maintains that metaphor is not only attached to language, but embodied, because the body constrains how the brain thinks about abstractions such as emotion, time, morality and politics (Kövecses 2005). Kövecses demonstrates that emotions have a metaphoric structure, as they are described as “forces coming out of a container (150)” and certain emotion words such as anger, fear, and love have etymological roots in conceptual metaphors and metonymies (Kövecses 2005). A 2013 study by Agus found that the interrelated processes of speaking, feeling, reflecting, and the related emotions are attached to language and mediated through conceptual metaphor (Agus 2013). Metaphors are often deployed when a subject is difficult to talk about and are revealing of emotional states (Agus 2013). It is through metaphor that art conveys what language cannot articulate, which is why art simultaneously disrupts and provides clarity; the fundamental reason behind the contemporary call for integration of art and science.

There are ongoing theoretical debates on what constitutes emotion and how to measure it (Feldman Barrett 2006; Coppin and Sander 2016). Many cognitive psychologists agree that there are a limited number of basic human emotions, which are universal across cultures, and that all other emotions are degrees of a basic emotion, or

blends of more than one basic emotion (Izard 1977; Ekman and Scherer 1984; Frijda 1986; Ekman 1992; Plutchik 2001). This perspective is contested largely on the question of what defines “basic” and what actually classifies as emotion (Turner and Ortony 1992). For those who agree there are basic emotions, there is no general agreement on what emotions are basic (arguments range from as little as 2 to as many as 18) (Turner and Ortony 1992), or what emotions mixed together make others. Lakoff (2016) contends there is no correct definition of “emotion” or basic emotion, and that the definition depends on the interests, skills, and academic ideology of a researcher (Lakoff 2016).

#### 4.5 Ontologies, Epistemologies, Worldviews and Values

Teel et al. identified a primary influential value dichotomy they contextualize as the utilitarian-mutualism value orientation (Teel et al. 2005). Incoherent human behavior (that which compromises human thriving) persists despite knowledge of the consequences because utilitarian value orientations overwhelmingly guide human decision making. As extensions of fundamental values, wildlife values express the worldview or ideal view of a desired end state as well as the principles that guide the modes of conduct advancing an ideal (Teel et al. 2005). Worldviews stem from interrelated ontological and epistemological positionings; how we understand the world to exist, and how we come to know the world. These orientations are fundamental to who we are as individuals and how we amass as cultures in societies. They are cultivated by our earliest narratives and manifest in human behaviors and social structures. These orientations situate our respective perceptions of human and non-human animal being and belonging in the world.



Marsh and Furlong conceptualize an integrated ontological and epistemological orientation as a skin, not a sweater; in that it is fundamental to the being of an individual, and thus cannot be taken on and off like clothing to suit a particular situation or accommodate new information (Marsh and Furlong 2002). Value orientations do not simply change in response to new information as they are culture-bound to worldviews and slowly change over many generations (Homer and Kahle 1988; Manfredi et al. 2016a). Thus, Manfredi et al. (2016) assert that while a human value shift from a utilitarian orientation to a mutualist orientation is needed for conservation success, this shift cannot be forced (Manfredi et al. 2016a). Regardless of new knowledge or awareness, societal values and worldviews will continue to influence global environmental change (Ehrlich and Kennedy 2005) and ultimately determine the success of conservation interventions. Worldviews, and by extension values, attitudes and behaviors, are influenced by social and cultural narrative. While narrative can reinforce existing value structures, it is also a vehicle for value change (Schwartz 2006).

Conservation success or failure is inextricably linked to human behavior, and conservation success requires behavioral change (Mascia et al. 2003; Ehrlich and Kennedy 2005; Clayton, Litchfield and Geller 2013). Human behavior is compelled by myriad factors, but behavioral and cognitive scientists surmise that the primary driver for behavioral *change* is motivation (Schultz 2011). Beliefs, values, norms, preferences, and attitudes dictate or moderate individual and collective motivation for behaviors toward and responses to conservation agendas and specific conservation interventions (Bennett

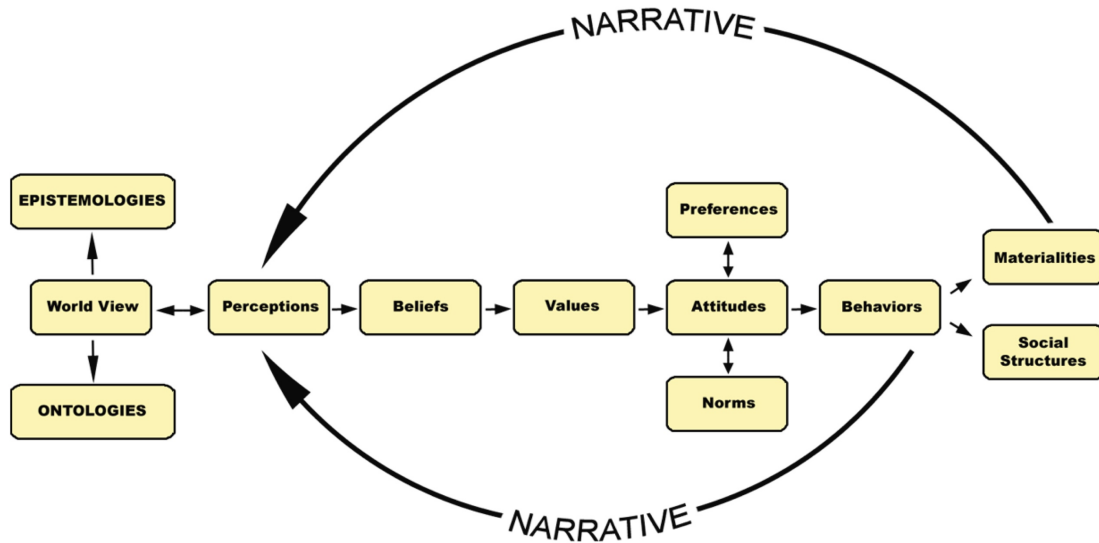
2016).<sup>94</sup> Significant attention has been given to the study of beliefs, values, attitudes and behaviors toward conservation and the environment (Fishben and Ajzen 1975; Ajzen 1991; Stern and Dietz 1994; Stern 2000; Manfredo et al. 2003; Teel et al. 2005; Manfredo et al. 2009; Teel and Manfredo 2009; Schultz 2011; Clayton et al. 2013; Klöckner 2013; Dietsch, Teel and Manfredo 2016; Manfredo, Teel and Dietsch 2016b; Manfredo et al. 2016a; Manfredo et al. 2017). Perception is a root input for the aforementioned factors, and Bennett (2016) argues that study of perception in conservation is indispensable because it provides critical insight on what compels conservation tolerance and engagement (Bennett 2016).

Perceptions are subjective and mediated by many factors including culture, politics, socioeconomics, livelihoods, past experiences, and knowledge, as well as the values, norms, beliefs, and preferences that perceptions likewise influence (Bennett 2016). That is, perceptions influence perceptions. Worldviews, beliefs and values influence attitudes and behaviors, are embedded in social structures such as law, management practices, and *defacto* rules and norms. They can provoke creation of material or semiotic references that in turn influence perceptions and behaviors. For example, ongoing construction of the U.S. Mexico border barrier has been heavily influenced by beliefs, values, attitudes and behaviors. The manifested border barrier has become a powerful symbol (embodying the beliefs and values that prompted its

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<sup>94</sup> Attitudes have been widely researched in social psychology, and here are many different definitions for “attitude”. I defer to Krech and Crutchfield’s holistic definition: “An attitude can be defined as an enduring organization of motivational, emotional, perceptual, and cognitive processes with respect to some aspect of the individual’s world. Krech, D. & R. S. Cutchfield. 1948. *Theory and Problems of Social Psychology*. New York: MacGraw-Hill. (152).”

construction), and it evokes perceptions of safety, isolation, separation, fear, power, and patriotism. These perceptions, in turn, influence behaviors. Thus, the construction of beliefs, values, norms, preferences and attitudes is not a linear process, but an iterative cultural, social and psychological process influenced by behavior and environmental factors. This process is cultivated by narrative while it is mapped into individual (psychological) and collective (cultural) landscapes (Figure 4.1).



*Figure 4.1.* The cycle of meaning-making. Perceptions lead to beliefs, which lead to values that shape preferences, norms and attitudes. Preferences, norms and attitudes lead to behaviors, which in some cases manifest as materialities such as a fence, or become embedded in social structures such as law and policy. Preferences, norms and attitudes are mutually influenced. Behaviors, materialities and social structures influence perceptions, which influence and over time can modify individual and collective perspectives that lead to behavior. Narrative is a vehicle for this iterative process (Figure by author).

#### 4.6 Conclusion

Land use is highly influenced by perceptions about wild animals, wilderness, what it means to be human, and the human imperative. Dualistic conceptions of humans

as separate from, and superior to, nature and non-human animals are deeply embedded in Western thought and culture, and they have tremendous influence on perspectives of human and non-human animal value and belonging. A utilitarian narrative is counter conservation, and the utilitarian narrative that drives exploitive and destructive human behavior is grounded in, and perpetuated by, the narrative and practice of science.

In the next chapter I illustrate how narratives about animality and wilderness have arisen from lived experience and have become structurally and materially embedded in Western culture and society, and Chapter Six examines the origins of the modern science narrative that emerged in the Age of Exploration (1400-1800 CE) and became culturally and socially rooted beginning in the Age of Enlightenment (1620-1800).

CHAPTER FIVE  
LITERATURE REVIEW: NARRATIVE CONSTRUCTIONS OF  
WOLVES AND THE WILD

5.1 Overview

In this chapter I demonstrate how narrative has been operationalized in culture and society. I specifically explore how historical narrative has influenced Western perceptions of human animality, wilderness, and the wolf, and by extension how narrative has influenced American wildlife conservation.

5.2 Wilderness and Wildman Narratives

Patrick Barron argues that *Gilgamesh*, one of the world's oldest surviving texts, is the literary root of the separation of humans from their wild animal nature (Barron 2002). The epic, dating to 2200 BCE goes like this: Gilgamesh, the tyrannical King of Uruk, builds walls around the city to enslave the people. The people ask the Gods to bring a man strong enough to stand up to Gilgamesh, and the gods create Enkidu, a hairy wild man who lives in the wilderness with the animals. Gilgamesh hears about Enkidu and sends a priestess to seduce him away from the wild. Once domesticated and brought to the city Gilgamesh befriends Enkidu, and they embark on a series of actions to destroy the wild world that threatens the kingdom. Their activities include chopping down a sacred forest and killing a sacred beast. As Enkidu is the personification of the wild, his actions are self-destructive. Cursed by the gods, Enkidu withers and dies leaving Gilgamesh to wander, anguishing over the death of his friend (Mitchell 2004). In this

story, the taming of the Wildman is the metaphorical separation and alienation of the human from the wild, which ultimately leads to the destruction of the environment followed by destruction of the wild-dependent human.

This tragic motif of human-animal separation has recurred in literature throughout the ages (Bernheimer 1952; Dudley and Novak 1972; Pinkola Estes 1992). Robert Bly argues the German story *Iron John*, another tale of friendship between a Wildman and powerful man (this time a prince), relates to man's repression and desire to reconnect with the wild (Bly 1990). Bly argues that the male radiant energy is possibly protected by the *instinctive* (comparable to the Freudian "Id") that lies deep below in the magnetic field of the *Wildman*. The *Id* (the human wild side) is repressed, and tends to reside in the human unconscious, which for Freud is the origin of causality. Bly puts forth that the Wildman in the story is representative of primitive, sexual and instinctual man. He posits that every man has the Wildman inside him, deep in his psyche and that the industrialized world has suppressed him by suppressing the attributes associated with the Wildman (Bly 1990).<sup>95</sup>

In *Women Who Run With the Wolves*, Jungian psychoanalyst Clarisa Pinkola Estés compares wild women (fierce women guided by their instinctual female nature) to endangered species, and argues women are all filled with a longing for the wild, but are taught to feel shame for that longing (Pinkola Estes 1992). Merchant highlights that the conception of a wild, chaotic nature in need of taming appeared frequently in sixteenth

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<sup>95</sup> Bly is a central figure in the development of the contemporary mythopoetic men's movement which, influenced by Jungian psychoanalysis, addresses the tension between the ego and the shadow, or the wild and chaotic. Pinkola Estes, C. 1992. *Women Who Run With the Wolves: Myths and Stories of the Wild Woman Archetype*. New York: Ballantine Books.

and seventeenth century literature including that of William Shakespeare, Frances Bacon, and Niccolo Machiavelli. In the 17<sup>th</sup> century, women were seen as maternal, virginal, and something to be honored, but they were also associated with a wildness and lustfulness that threatened to enslave men. Merchant argues that during the Enlightenment, efforts to control women were an extension of a greater agenda for control over the chaos and wild embodied by women (Merchant 1989), which is why highly sexual, overtly emotional, intelligent, or nonconformist women were often accused of and persecuted for witchcraft (Fox Keller 1985).<sup>96</sup>

Narratives (albeit not all literary) about the wild have arguably been mapping human brains since the beginnings of *homo*. While the West is not a singular monolithic culture or geography, narratives about Nature, the wild, and wild animals are largely shared by Western countries. The American relationship with the wild is directly traceable to European narratives from the Middle Ages heavily influenced by the Catholic Church.<sup>97</sup> These religious narratives dominated through the Age of Exploration, when the scientific revolution paved the way for the progress narratives that guided the

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<sup>96</sup> This superstitious mindset toward women, emotion and the wild was pervasive before the scientific revolution and is alluded to in art of the Middle Ages

<sup>97</sup> Time periods of human history are not uniformly defined across the literature, as periods are generally referenced for their dominant social or environmental states. Time periods often overlap by a century or more of transition marked by significant intellectual, cultural, social or environmental change rather than uniform calendar dates. What is considered significant varies amongst scholars in the diverse literature sources in this dissertation. I reference the following Western historical periods accordingly: The Middle Ages (also referred to as the Medieval period or the Dark Ages) were the roughly 1000-year period (500-1499 CE) in European history, between Classical Antiquity and the Modern Era. The Renaissance period, roughly 1300-1600 CE marks the transition from the late Middle Ages to the Early Modern Era. The Renaissance overlaps the Age of Exploration, also referred to as the Age of Discovery (roughly 1400-1700 CE). The Age of Enlightenment, also referred to as the Age of Reason, (roughly 1620-1800 CE), overlaps the Age of Exploration.

establishment and expansion of the U.S.<sup>98</sup> Narratives from the Middle Ages have cohabitated with subsequent narratives, such that today's American ideas about the wild still draw from stories embedded over the last 1500 years or so.

Historical narrative is influenced by personal and social variables that influence a writer's philosophy, approach, selection and interpretation of facts. Additionally, the better part of lived experience has gone unrecorded, so reported historical events, and social transitions are highly subjective. The history of the Middle Ages spans a 1000-year period during which there were limited intellectual products to reference in constructing a clear picture of changing natural landscapes and social systems of Europe. The Middle Ages were literally cold and dark but are referred to as the "Dark Ages" partly due to their lack of intellectual products in comparison to the classical time before and the Renaissance after.<sup>99</sup>

The Wilderness is portrayed biblically as a place of danger, but also a place solitude and revelation. The wilderness was the genesis of creation and a place where acute suffering forced spiritual confrontation. Jesus was tested by God the wilderness, as were the Israelites, and it was through their suffering that they became God's chosen people (Phillips 2018).<sup>100</sup> The narrative of wilderness as a place of solitude, was

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<sup>98</sup> Gilbert F. Lafreniere postulates that the Western European ideal of progress went largely unchallenged until Oswald Spengler's *The Decline of the West* (1918), in which Spengler critiques the western reliance on science and technology and introduced the idea of cyclical history. Lafreniere, G. F. 2007. *The Decline of Nature: Environmental History and the Western Worldview*. Bethesda, MD: Academia Press.

<sup>99</sup> The Little Ice Age was a period of extended glaciation in the European Alps between 1300-1950 CE resulting in a European cold climate period between the 1570 and 1900 CE. Matthews, J. A. & K. R. Briffa. 2005. The 'Little Ice Age': Re-evaluation of an evolving concept. *Geografiska Annaler*, 87A, 17-36.

<sup>100</sup> The narrative of wilderness as a place of solitude, reflection, and spiritual transformation was rekindled in the 19th century.



overshadowed in the Middle Ages by representations of wilderness as a dangerous liminal place wilderness as a place for reflection and spiritual transformation would not to be rekindled until the 19th century.

Much of the physical world was unknown in the Middle Ages, and it was conceived similarly to the metaphysical unknown. Mythical animal-human hybrids such as sirens, men with tails, and shapeshifting creatures were a social reality. Images of these creatures were often illustrated by cartographers on the edges of maps to denote unexplored or dangerous places at the edge of the world.<sup>101</sup>

Along with maps, numerous monstrous and hybrid creatures decorated medieval manuscripts and were featured in bestiaries.<sup>102</sup> Narratives arose in relation to these images. For example, the Cynocephali were a dog-headed race described as cannibalistic, cruel, and said to use barking to communicate. Marco Polo in 1266 CE mentioned finding a dog-headed race on the Andaman Islands (in the Indian Bay of Bengal), and Giovanni da Pian del Carpine (1182-1252 CE) reported a dog-headed race living in Lake Baikal in Siberia. Pliny the Elder wrote about them in his *Natural History* in 1 CE (Pliny the Elder 194-195), as did Greek naturalist Aelian (2 CE), and several others between 1 and 5 AC (Atsma 2000-2011). There are biblical references to dog-headed men as the offspring of Adam's children (Block Friedman 1981), and they appear in the Arthurian legends as warriors.<sup>103</sup> St. Christopher (311 CE), a Canaanite Saint of the Eastern Orthodox Church

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<sup>101</sup> The sea was then and remains the most unexplored place on Earth, and images of sea monsters persisted on maps into the 17<sup>th</sup> century.

<sup>102</sup> Bestiaries were encyclopedic religious texts used to extend moral teachings. They depicted animals and fantastic beasts in allegorical contexts with accompanying descriptions of the beasts' behaviors and attributes.

is often depicted as a dog-headed creature (Block Friedman 1981), and sometimes as a part of a dog-headed race (Figure 5.1). St. Christopher was reportedly fierce and of mythical height.<sup>104</sup> He is said to have carried a child across a stream, who unbeknownst to him, was the Christ child.<sup>105</sup> The waters symbolize what separates heaven and Earth, and St. Christopher is perceived as a vessel of Christ. The dog-headed symbolism is of note here, as the dog is mythologically associated as a guardian of the underworld or a guide to the afterworld in many cultures.<sup>106</sup> The association of dogs as occupants or travelers of liminal spaces or transitional states is persistent throughout history.

The Catholic Church wielded tremendous power and resources during the Middle Ages, and clergymen who had the education and means to keep record were largely responsible for the literature produced.<sup>107</sup> The history of the Middle Ages is thus, largely represented in religious art and texts. These texts advanced fear-based narratives about the wilderness and wild animals, often aligning the wilderness and its inhabitants with the construct of evil (Nash 2001 org. 1967).<sup>108</sup>

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<sup>103</sup> It is possible some of the dog-headed men that were written about were actually men wearing wolf pelts, perhaps with non-European facial features and speaking a language that to the European traveler sounded like barking.

<sup>104</sup> John Metford speculates that the dog-head imagery may have been the result of a simple misunderstanding of St. Christopher's self-description as "Canaanite" which resembles the term *canineus*, which translates as "canine". Metford, J. 1983. *Dictionary of Christian Lore and Legend*. London: Thames & Hudson.

<sup>105</sup> The name Christopher means "Christ-bearer".

<sup>106</sup> A sampling includes: Garm (Norse) is the wolf-dog guardian of hell; Cerberus (Greek) is the multi-headed dog guardian of Hades; Anubis (Egyptian) is the Jackal-headed God of the dead. Also, in Aztec traditions a dog is sacrificed to guide his master across nine rivers to the eternal house of the dead. Scott, T. 2007. Remarks on St. Christopher. In *Vincit Omnia Veritas Collected Essays*, eds. Renaud Fabbri & Timothy Scott, 63-74.

<sup>107</sup> Literary works were not widely available, as the printing press was not invented until 1440 AC, the invention of which led to the transition into the Early Modern Period in the 16<sup>th</sup> century.



Figure 5.1. Left: Christ surrounded by a dog-headed race, Kiev Psalter, Ukraine, 1397; Middle: Cynocephalus, Nuremberg Chronicle, 1493; Right: Icon of St. Christopher, Museum of Rostov, Kremlin, 17<sup>th</sup> century Byzantium.

Nature's value was conceived primarily as a tool for God's project to separate good from evil, which is the crux of the anthropocentric Christian agenda (Lafreniere 2007). Good versus evil narratives were entangled with catastrophic events, such as the Black Plague (1347-1351 CE) and the Inquisition (1250-1550 CE), which had devastating effects on society. Narratives of superstitious peasants and witches living on the edges of forests inhabited by mythical creatures, and laden with danger blend with gothic images of cloaked monks carrying crosses and candles through dark, cold, and dirty streets, crowded by hungry people in rags. This is the popular conception of what Europe was like before science and technology arrived to rescue the people from the dark.

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<sup>108</sup> Nash notes that St. Francis of Assisi was the one medieval religious figure that appreciated nature's value, though others argue there was broader Christian appreciation of nature. Lafreniere, G. F. 2007. *The Decline of Nature: Environmental History and the Western Worldview*. Bethesda, MD: Academia Press.

Many conceptual views of Nature existed over the long course of the Middle Ages, engendering different value systems and attitudes toward nature that shifted over time. Nona Flores argues that allegorical and scientific approaches to understanding animals formed the dominant attitudes toward animals as a reflection of morality and as a way of understanding anatomy and behavior, respectively (Flores 1993). Given the extensive pastoralism and use of working animals in the Middle Ages, utilitarian attitudes toward animals could also be supposed.

Gilbert F. Lafreniere illustrates in *The Decline of Nature* (2007) that both progress and nature's decline followed non-linear patterns (Lafreniere 2007). Lafreniere describes a fluctuating natural and social history of population booms, deforestation, and resource extraction, punctuated by periods of disease and warfare that reduced human population and thereby allowed regrowth of forests and reestablishment of wildlife (Lafreniere 2007). During the Roman Empire, many Western European plains and river valleys were farmed, and wilderness and wildlife were pushed back to mountainous areas (Lafreniere 2007). However, after the Empire's fall, population remained fairly low for several centuries, during which much of the previously cultivated land rebounded to a wilderness state.

The fall of the Roman empire (476 CE) left Europe in shambles, as displaced barbaric tribes integrated with indigenous people and formed warring fiefdoms. These fiefdoms, along with monasteries, fortified their territories with walls, creating hard boundaries between humans and the surrounding natural environment (Lafreniere 2007). During this time, Europe's primordial forests experienced regrowth, and wildlife including wolves and bears returned. The wilderness expanded until the 9th century when

population growth around the fortresses became the cities of the later Middle Ages, and the wilderness was reconverted to farmland (Lafreniere 2007). This fluctuating landscape contributed to changing attitudes toward wilderness and wildlife. The complex relationship between Europeans and the wild is evident in the art and literature of the Middle Ages and Renaissance, which reveals a preoccupation with fluid boundaries between the wild and tame, human and animal, urban and rural, body and soul, and good and evil. These boundaries were being negotiated in tandem with political, economic and geographic shifts. Narratives about the wild became embodied in the institutional structures of society.

During the high to late Middle Ages, there was a generalized movement toward a structured feudal system in which knights and lower power nobles gave military service or labor to their overlords in exchange for rights to rents from lands (Brown 1974).<sup>109</sup> This coincided with the expansion of manorialism, which promoted organization of scattered people into villages where they were then indebted to the manor lords for use of land parcels (Lucki 1963). By the 14th century, England for example, was highly centralized with an administrative system operating under a monarchy that had power to tax, declare war and regulate internal justice (Collette and Garrett-Goodyear 2011).

The centralization of power and money led to greater centralization of kingdoms, and greater definition of boundaries between human occupied lands and wild lands. The wild that lay beyond villages and urban centers was a threat to the development of the civilized world, which was supported by tax-based economic and political structures.

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<sup>109</sup> Feudal and feudalism are contested terms as historians debate the application of the terms uniformly to different European societies.

Undignified human behavior and places perceived as dirty or uncivilized were constructed as dangerous or demonic (Lafreniere 2007). Rural areas on the wilderness periphery were contested spaces. While the Catholic Church and the various monarchies and states in Europe competed for ultimate authority, narratives about animality and the wilderness served both the state's agenda to organize autonomous people into tax-paying villages, and the Church's agenda to Christianize them (Lafreniere 2007). The conversion of pagans living in and on the edges of the forest was facilitated by taking the forest away. Monasteries were largely responsible for the clearing of forests for agriculture including vast clearing of timber for planting of vineyards and clearing for development of monastic villages (Lafreniere 2007).<sup>110</sup> This served a dual purpose of rooting out pagans and enriching the Church with land and agricultural products.

By the late Middle Ages, Christianity had permeated most of Europe, but pockets of religious resistance to Christianity remained, mostly in rural or more remote areas (Bailey 2008; Kamerick 2008). Concerns over the nature of spirituality and power along with changing intellectual structures caused a shift in the perception of the importance of common practices, including those that were shifting from being perceived as harmless folk ways to being threateningly demonological (Bailey 2008). There was concern over belief in witches and monsters, and in many places superstitious activities were severely punished. Clergy disagreed about what constituted superstition as at the time, Christian

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<sup>110</sup> Clearing of the forests in the High Middle Ages resulted in a series of ecological crises in the Late Middle Ages corresponding with the Little Ice Age, the Black Plague, which led to social demoralization and disillusionment with the Church, to which the responding narrative was that the world was worn out and thus people should prepare to ascend to God. Lafreniere, G. F. 2007. *The Decline of Nature: Environmental History and the Western Worldview*. Bethesda, MD: Academia Press.

prayer might have included use of charms or recitation of blessings that some considered to be dangerous magic while others felt these were harmless (Bailey 2008; Kamerick 2008). That which did constitute superstitious activity was considered dangerous dealing with the devil, and people were warned against being tricked by demons as they could take control of a person on behalf of Satan (Bailey 2008). Despite Christian syncretism of some pagan practices and the widespread acceptance of the Genesis creation story, non-Christian practices persisted throughout Europe beyond the reach of the Church, particularly in the British Isles (Bailey 2008; Kamerick 2008). Cases of superstition in 15<sup>th</sup> century England, including charm-making and divination, were more tolerated than in other parts of Europe, and if punished were not punished at the level of heresy (Kamerick 2008).

Though rural people were often considered superstitious, the myths and stories from the borderlands captivated rural and urban populations alike (Bailey 2008). In these times the figure of the Wildman appeared prominently in art and literature (Bernheimer 1952; Dudley and Novak 1972).<sup>111</sup> Aside from *Gilgamesh*, literary references to the Wildman date back to the 12<sup>th</sup> century and representations of the Wildman in art begin in the mid-13<sup>th</sup> century (Bernheimer 1952).

Wildmen were associated with mythical creatures of Classical times such as Roman fauns, and related stories often followed those established in the Classical time

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<sup>111</sup> Though the Wildman is most commonly depicted as male, wildwomen and wildchildren do occur in the Medieval art and literature. Wiseman, S. J. 2004. Hairy on the inside: Metamorphosis and civility in English werewolf texts. In *Renaissance Beasts: Of Animals, Humans, and Other Wonderful Creatures*, ed. Ericka Fudge, 50-69. Urbana, IL: University of Illinois Press. In addition to the Wildman, there were artistic and literary depictions of monstrous humans including those with their heads located in their bellies, their eyes in their chests, or backward feet. Friedman, J. 2010. Monsters and monstrous races. In *Encyclopedia of the Medieval Chronicle*, ed. R. G. Dunphy, 1117-1121. Leiden: Brill, Leiden and Boston.

period (Bernheimer 1952). Wild people were often depicted in civilized roles, as warriors and on coats of arms (Figure 5.2). The hybridity of the Wildman is less in the Wildman's physical characteristics than in his demeanor. He is a hybrid of man and animal because although human, he is uncivilized and often lives with animals. The Wildman was commonly depicted as hairy humans with long hair and usually naked but for foliage covering his body (Bernheimer 1952).



Figure 5.2. Wildman with coat of arms, engraving. Martin Schongauer, German, 15th century.

A key attribute of wildmen is that they were essentially human, and thus they represented a human in a liminal space; the embodied negotiation of the desire to civilize and the impulse to return to the wild. S.J. Wiseman (2004) recounts the 1731 story of a wildgirl found in France who was looked upon as demonic when first discovered but was later rescued from evil through her acquisition of religion

and the French language (Wiseman 2004). This story, taking place during the Enlightenment, highlights how a person can be rescued by civilization (Wiseman 2004), *and* how civilization can fail resulting in the overlooking or casting out of a person, such as the aforementioned child who, having been found in tattered clothes, had likely been civilized at some point before becoming wild. Hayden White (1972) writes, "If we do not know what we think 'civilization' *is*, we can always find an example of what it is not. If we are unsure of what sanity is, we can at least identify madness when we see it (White



1972) (5).” White argues that past societies looked to the wild in order to identify something subhuman so that they might locate their humanity in their lack of affiliation with it. He calls this a “technique of ostensive self-definition by negation (White 1972) (5)”, a process Agamben points out is what Linnaeus determined (when creating taxonomies), was the only thing to distinguish the human (Agamben 2004).

As humanity became increasingly affiliated with civilization in the high to late Middle Ages, individuals (human and non-human) occupying the unstructured wild woods, moorlands, uplands and outlands or their fringes were often portrayed as sub-human or supernatural.<sup>112</sup> The wilderness and its wild inhabitants were depicted as dark, foreboding, and dangerous. These were not only places where a person could get physically lost or disoriented, they were places where humanity could be lost. For example, the neo-medieval Myrkvio (an Old Norse term meaning “murky wood”) was a legendary enchanted wood that formed the boundary between the material and spiritual worlds (Pluskowski 2006). The civilized world was contextualized by the Church as closer to God, and thus a civilized person was spiritually ascending. Conversely, the wilderness was associated with God’s opposite: the Demon; animality, the expression of spiritual descent.<sup>113</sup> The fringes of physical wilderness were contested liminal spaces where the essence of struggle between the wild and the controlled, the evil and the saved, was manifest. It was in this climate that the wolf became tragically destined to occupy both of these worlds.

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<sup>112</sup> The term “outlandish” meaning bizarre or ridiculous is a derivative of the word “outlands”.

<sup>113</sup> This is paradoxical, as it was in the wilderness that God has spoken to many prophets.

### 5.3 The Wolf in European Narrative

The wolf is enmeshed in religious and social narratives, and it is virtually impossible to create viable contemporary conservation strategies for the corporeal wolf without considering the influence of the socially constructed wolf. Perhaps more than any other animal in Western culture, the wolf is emblematic of human animality and the tensions between the orderly civilized world and the chaotic wild. Throughout history the wolf has been associated with the liminal space between human and non-human animals, between the natural and the supernatural, between good and evil, and between life and death.

The wolf figures biblically as the oppositional threat to the lamb or the sheep. The lamb is the semiotic Christological identity in biblical texts, and the wolf the embodied threat to Christianity. The biblical wolf is symbolic of false prophets (Matthew 7:10), the opposition of the apostles (Matthew 10:16, John 10:12), and the threat to the soul of parishioners (Luke 10:13, Acts 20:29, Ezekiel 22:27) (The Holy Bible 2000a). Nearly all biblical references (and all New Testament references) metaphorically position sheep or the flock as parishioners, apostles as shepherds, and wolves as the (often disguised) threat to spiritual elevation (Pluskowski 2006). Numerous other Christian texts including sermons, elegies, and church commentaries invoke this wolf-sheep metaphor (Pluskowski 2006).<sup>114</sup> Secular literature including political commentary, business rhetoric, and political satire have leveraged this wolf identity, with wolves nearly always depicted negatively.<sup>115</sup>

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<sup>114</sup> Similar wolf-sheep metaphoric use is also present in classical literature Pluskowski, A. 2006. *Wolves and the Wilderness in the Middle Ages*. Woodbridge, Suffolk: The Boydell Press.

Popular understandings of the relationship between people, wolves, and the wild are driven by fears encouraged by Christianity (Pluskowski 2006), but wolves were ascribed curious identities in the Middle Ages, and they had complex cultural roles that changed as physical landscapes, politics, economics, and power structures changed. Some fables positioned the wolf as an object of ridicule, rather than a dangerous aggressor



Figure 5.3. “Wolf”. While bestiaries commonly illustrated the wolf approaching a flock of sheep, this entry in the British Royal Library Bestiary. MS 12 F. xiii, Folio 29r shows the scene of the man who has lost his voice and is smashing rocks to ward off the wolves.

(Pluskowski 2006). Wolves were depicted in bestiaries as evil and cunning, but also as self-sacrificing, or as fool-hearty tricksters. It was said a man would lose his voice if a wolf saw him first in the forest and that a man would then have to smash rocks together to keep wolves from attacking. However, if a man saw the wolf first, the wolf would lose its fierceness (Badke 2010). This description allegorically warns people to be on guard for evil, but also demonstrates the characteristic shyness of the corporeal wolf and its flight response to hazing (Figure 5.3).

<sup>115</sup> One notable deviation is the biblical apocalyptic return to innocence, in which “the wolf also shall dwell with the lamb, and the leopard shall lie down with the kid; and the calf and the young lion and the fatling together; and a little child shall lead them (Isaiah 11:6) and “The wolf and the lamb shall feed together, and the lion shall eat straw like the bullock: and dust shall be the serpent’s meat. They shall not hurt nor destroy in all my holy mountain, saith the LORD (Isaiah 65:25). The Holy Bible. 2000b. The Holy Bible, King James Version. In *Bartleby.com*, ed. The American Bible Society. New York: American Bible Society. In these passages, the wolf becomes peaceful only when it ceases to exhibit the behaviors of a wolf.

The wolf was also portrayed as a protector, and is depicted as guardian of St. Edmond's head on the wall of St. Edmund church in Norfolk (Pluskowski 2006). A particularly enduring pre-Christian (753 BCE) story highlights the familial social qualities of wolves. This story tells of a vestal virgin who becomes pregnant by a demi-god and bears twin boys: Romulus and Remus. Fearing the wrath of the gods for the virgin's pregnancy, the King sentences the twins to live burial via exposure to the elements and orders a servant to do the deed. The servant takes pity on the babes and puts them into a basket and floats them down the Tiber River, where upon hitting the shore they are discovered by a she-wolf who suckles them until one day, a sheep-herding family discovers them and raises them. As young men they founded the city of Rome (Garcia 2018). The biblical parallel to Moses escaping death as a baby because a person took pity on him and floated him down a river in a basket, is hard to ignore. This narrative is particularly interesting, as it places the wolf and the shepherds in alignment rather than in opposition as later biblical narratives do, and it is illustrative of the complex pre-Christian associations between humans and wildlife. It is tragically paradoxical that this narrative portrays the wolf as an (albeit unwitting) founder of civilization, which eventually spawns the demise of wolf populations worldwide. Nevertheless, this narrative placed wolves into favor in Italy, where they fared far better over the centuries than they did other places in the West (Boitani 2003).

Though the wolf is commonly associated with the forest, historically wolves inhabited grasslands and prairies, and it was increasing human expansion that pushed wolves nearly exclusively into forested areas (Pluskowski 2006). Wolves and humans coexisted in relative balance until extensive agriculture and pastoralism put them at the

odds (Pluskowski 2006). As forests were dismantled and converted for farms, wolves were displaced, and their wild prey was reduced. Wolves began to prey on livestock, which put them into closer contact and conflict with villagers. Livestock raising was an important livelihood, and in some parts of Europe shepherding was commercialized, by end of the 11th century (Pluskowski 2006). Documents report that wolves approached urban centers as well as villages (Pluskowski 2006), and wolves were reputed to have waited on the outskirts of cities to devour the dead bodies of plague victims (Emel 1998).

Records from France, Estonia and northern Italy document numerous references to people being attacked or killed by wolves, including well-documented attacks by the “Beast of Gévaudan”, in which several wolves or wolf-hybrids attacked, killed, and in some cases partially ate between 100 and 210 people between June 1764 and June 1767 (Linnell et al. 2002a).<sup>116</sup> The fringe-navigating wolf that came from the wild to threaten civilization became hated throughout Europe, and wolves were rhetorically constructed to be vicious, cruel, selfish, conniving, and generally lacking any redeeming qualities. Salient biblical narratives about wolves, likely influenced perceptions about wolf depredation and contributed to the extremity of wolf villainization.

In the Middle Ages wolf persecution was organized, sponsored, and backed by legislation in many European countries (Boitani 2003) resulting in widespread decline

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<sup>116</sup> Attack numbers vary depending on the source. Many wolves were killed in the hunt for “*the beast*”, and eventually the attacks ceased after two exceptionally large wolves were killed. These wolves had unusual coat colorings, and some researchers speculate they were wolf-sheep dog hybrids. Surprisingly, these wolves were not found to be rabid, which was by far the commonest cause for pre-20<sup>th</sup> century wolf attacks. Linnell, J. D. C., R. Andersen, Z. Andersone, L. Balciauskas, J. C. Blanco, L. Boitani, S. Brainerd, U. Breitenmoser, I. Kojola, O. Liberg, J. Løe, H. Okarma, H. C. Pedersen, C. Promberger, H. Sand, E. J. Solberg, H. Valdmann & P. Wabakken. 2002. The fear of wolves: A review of wolf attacks on humans. *NINA Oppdragsmelding*, 731, 1-65.

and extirpation of wolves across Europe. In England and Wales, where wolf hunting with dogs was a nobleman's sport (Emel 1998), wolves were hunted into extinction by the mid-16th century, Scotland by 1684, and Ireland by 1770 (Boitani 2003).<sup>117</sup> England had reduced its forest cover to just 15 percent by 1086 AC (Lafreniere 2007), which contributed to rapid extirpation of wolves. Scotland finished off wolves by burning its forests down (Boitani 2003). In Central Europe and Scandinavia, where forest cover persisted longer, wolf populations dramatically declined but did not become extinct until the late 19th and mid-20th centuries respectively (Boitani 2003). In Southern Europe, cultural tolerance for wolves was higher, and in Italy wolves never became extinct (Boitani 2003), a nod to the lupine foster mother of Romulus and Remus. Eastern European wolf populations declined to very low populations in isolated areas, but survived extinction in many countries due to lower human population densities and absence of significant institutionalized wolf eradication efforts (Boitani 2003).<sup>118</sup>

#### 5.4 Human-Wolf Hybridity in Narrative

As wolves disappeared from landscapes throughout Europe, the myth of the werewolf took root as a timely scapegoat for anything opposing increasingly stratified

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<sup>117</sup> The gray wolf is recognized as the progenitor of the domestic dog. In the Middle Ages there was recognition of a relationship between wolves and dogs, though dogs occupied different environments, had different relationships with humans, and were conceptualized as distinct from wolves. Wild dogs did, and still do, occupy shared geographic and conceptual space with both wolves and domestic dogs.

<sup>118</sup> Wolves became extinct in Denmark in 1772, in France in 1934, Bavaria in 1847, and in all other Rhine regions by 1899. In Scandinavia wolves persisted until 1966 in Sweden and until 1973 in Norway. Boitani, L. 2003. Wolf conservation and recovery. In *Wolves: Behavior, Ecology, and Conservation*, eds. David L. Mech & Luigi Boitani, 317-340. Chicago: University of Chicago Press. European wolves have rebounded some with protections and reintroduction efforts are in consideration. Italy's wolves have dispersed to other countries, and a small population was discovered in Sweden that has dispersed to Norway. Contention over wolf recovery in Europe parallels recovery tensions in the U.S.

European societies. While the Wildman, a man-like savage that could be harnessed and tamed, invited Christianization (White 1972), the werewolf represented that which went the other direction, ferociously into the wild where it communed with the devil, only to return to prey on those who skirted the edge of Christianity on the outskirts of the civilized world. The werewolf narrative incited a fear that served a multifaceted agenda to urbanize rural people into taxpaying villages, to drive pagans toward Christianity, to eradicate remaining wolves that preyed on livestock, and to explain unsavory, abnormal or criminal human behavior.

Werewolf legends are heavily based on folklore from France and Germany, where hundreds of werewolf trial records were produced (Pluskowski 2006). Wolf attacks, such as those by the wolves in Gévaudan, France were exaggerated to mythical status such that the work of many wolves was attributed to a single wolf (Linnell et al. 2002a) or a wolf was ascribed supernatural characteristics of a werewolf (Smith 2011). The werewolf became a prominent and persistently symbolic figure in European culture through the Renaissance (Summers 1966; Otten 1986), and retains greater contemporary cultural significance worldwide than any other therianthropic creature.

Variations of shapeshifting animals, including werewolves, have existed in many cultures since early history. Legends of were-tigers and other types of were-cats populated cultures of India, China and Southeast Asia (Summers 1966). Were-pigs, were-eagles and were-serpents were common in Central and South America, and in many regions humans were thought to be able to change into a multitude of different animals (Summers 1966). Some legends of therianthropic metamorphoses relate to an animal changing into a human, and some transformations birth protectors or warriors rather than

evil beings (Summers 1966; Baring-Gould 2008 org 1865). Scandinavia had were-bears called *berserkir*. The berserkers were so called for their wearing of bear coats in battle. Old Norse literature reports they fought in a fury that made them appear to be in a trance, and are said by some to have drawn a supernatural power from the bear



Figure 5.4. Vendel era (550-793) bronze plate Öland, Sweden

(Summers 1966) (Figure 5.4).<sup>119</sup> In the *Völsunga* saga (13th century) Odin's warriors the *Úlfhéonar*, associated with the berserkers, are said to have worn wolf pelts in battle, and references to wolf shapeshifting feature prominently in the *Völsunga* (Anonymous 1888 org. 13th c ACE).

The folkloric werewolf is a human ordained with a supernatural capacity to voluntarily or involuntarily shapeshift into a wolf or anthropomorphic wolf-like creature, thereafter manifesting the behaviors, capabilities and instincts of a wolf (Summers 1966). The transformation takes place purposely through witchcraft or is afflicted by a curse. Depending on the legend, the transformation can be permanent or temporary, hereditary or acquired, and it usually recounts the transforming of a man as opposed to a woman or a child (Summers 1966).

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<sup>119</sup> The English word "berserk" comes from this reference.



A person can become a werewolf by various means, but in the early to high Middle Ages being bitten by a wolf was not commonly one of them. During this time period one became a werewolf by either being commanded to be so directly by Satan, by putting a magic salve or grease on the body, by wearing a magic girdle or belt, by drinking a magic potion, or by donning a wolf skin (Summers 1966; Otten 1986; Briggs 2002; Baring-Gould 2008 org. 1865). The affliction catalyst (i.e. a bite or scratch from a werewolf) to lycanthropy appeared in art and literature from the 15th century forward, and is associated with transmission of rabies via rabid wolf attacks (Stone 1994; Wasick and Murphy 2012) after human populations came into closer contact with wolves, and during a time when such contact was both physically and spiritually compromising (Stone 1994, Wasick and Murphy 2012). Wasick and Murphy (2012) summarize:

“Rabies is a scourge as old as human civilization, and the terror of its manifestation is a fundamental human fear, because it challenges the boundary of humanity itself. That is, it troubles the line where man ends and animal begins – for the rabid bite is *the* visible symbol of the animal infecting the human, of an illness in a creature metamorphosing demonstrably into that same illness in a person (Wasick and Murphy 2012, 4) (4)”.

Not surprisingly, werewolves are also associated with tailed men. A Polish story tells of a witch who laid a girdle of human skin across the threshold of a door where a marriage feast was taking place so that when the wed couple crossed the threshold they were turned into a pair of wolves. Three years later the witch found the wolves and threw dresses of fur on them causing them to return to their human form. It is said the dress

thrown on the male wolf did not cover his tail and so he maintained his tail; thus creating the “tailed man” (Baring-Gould 1894).

The use of a threshold is notable in this story, as a threshold is symbolic of a passageway or bridge to another world. Sabine Baring-Gould recounts several stories supporting the belief in tailed men in the Middle Ages and cites several sources in which races of tailed humans are mentioned to exist in or near Abyssinia (Baring-Gould 1894). He writes in 1894 of the persistent belief that Kentmen and Cornishmen had tails. He cites *The Voyages de Jean Struys* (1650) in which Dutchman John Struys tells the story of a man who was viciously murdered on the Isle of Formosa and the accused turned out to be a tailed beast, who was subsequently executed by the townspeople. Interestingly, the aspect of a tail, though associated with Satan, was not always undesirable. Eighteenth century Scottish judge and philosopher Lord Monboddo argued that lack of a caudal appendage was actually a human fault:

“... a sad blemish in the organization of the man ... The tail, the point in which man is inferior to the brute, what a delicate index of the mind it is! How it expresses the passions of love and hate, how nicely it gives token of the feelings of joy or fear which animate the soul! (Baring-Gould 1894, 149-150).”

The werewolf was alarmingly real in Europe during the Middle Ages. In the 8th century werewolves were reported to haunt the countryside of England (Venerable Bede’s “Ecclesiastical History of England). In the British Isles, Celtic lore tells of the *fáelad*, which are families that have a legacy of lycanthropy (Summers 1966). Several versions of werewolf legends persisted throughout the Flemish, Dutch and German regions. The “Back Rider” legend tells of a wolf or Wildman that jumps on the back of a

person passing through the forest and hitches a ride. The “Werewolf Lover/Husband” legend tells of a man who leaves his wife, comes back as a wolf and bites her, then leaves and returns again as his man-self but is identified as the wolf by the bits of her clothes in his teeth. The “Hungry Farmhand” legend tells of a farmhand or woodsman who turns into a werewolf while camping with his coworkers, goes out and kills livestock, then returns to camp as a human. He is usually suspected as not being “quite right” in the first place, which prompts one of his coworkers to spy on him and find out the truth (de Blécourt 2007).

Charlotte Otten posits that ancient myths involving human transformation into animals assessed the moral dimensions of human life, whereas the werewolves of the Middle Ages assessed the evil dimensions of human life (Otten 1986). However,



Figure 5.5. Lycaon Turned into a Wolf, Goltzius 1589

there are narrative links between the two periods. Throughout the Middle Ages the werewolf was associated with diabolical behaviors including rape, murder and cannibalism. The connection between werewolves and cannibalism is tied to mythological Greek King Lycaon of Arcadia (1550 BCE). The myth as recorded by Apollodorus of Athens and later written down in the first century by Ovid in *Metamorphoses* (Ovid 1) tells of the god Jove (Jupiter) disguises himself as a man and roams Earth to look in on human affairs, which he perceived to be in disarray. King

Lycaon wanted to find out if the traveling man was really a god, so he kills a man, cooks him and serves him at a banquet to Jove. Jove punishes Lycaon for his testing his omnipotence by turning him into a wolf so that others would see his savage nature (*Ovid 1*) (Figure 5.5).<sup>120</sup> *Metamorphoses* was extremely popular in the Middle Ages and reflected the period's obsession with the idea of transformation.

The construct of lycanthropy as illness arose in the Middle Ages. Reginald Scot attempted to liberate witches and lycanthropes from persecution with *Discoverie of Witchcraft* (1584) in which he used Hippocrates' humoral theory to argue that individuals became witches and lycanthropes due to an excess of melancholy, one of the four bodily humors (Otten 1986). In 1603 a young man, Jean Grenier, confessed to eating children after being transformed into a werewolf by rubbing a salve on his body and wearing a wolf skin that he received from a man in the forest. Despite his confession, he was found mentally unfit and therefore unaccountable for his crimes. Grenier was sentenced to life in a monastery where he would receive spiritual care (Otten 1986). Lycanthropy is a contemporary clinical term for a pathological condition in which one believes himself to

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<sup>120</sup> There are many other versions of this myth, but Ovid's was arguably most popular. The story of Lycaon gives us the word *Lycanthropy*, which has been used to refer to both the business of being a werewolf and also a sickness related to being a werewolf. The word "werewolf" has several possible etymologies. *Wer* or *Were* are German for "man" so that *werwolf* or *werewolf* is a "man-wolf". *Vir* is the Gaelic word for fear, so that one may create a "fear-wolf". Sixteenth century writer Turberville argued that the word is *ware*-wolf because one must beware of them, and the German word *Wehrwolf* may come from the cognate *wehren* which means "to take heed". The French werewolf is named *Loup-garou*. Summers, M. 1966 org. 1933. *The Werewolf*. London: Kegan, Paul, Trench, Trubner & Co, Ltd. The word *wearg* and its variant *wearh* are derived from the German *warg*, which can mean wolf, but can also mean, "outlaw". In Germany outlaws were forest dwellers that could be rightfully killed. Thus the German human outlaw could be named a werewolf and be legitimately killed, and forest dwellers could likewise be villainized and punished. Stone, A. 1994. Hellhounds, Werewolves and the Germanic Underworld. In *Mercian Mysteries*. Marlborough, Wiltshire, UK: At the Edge/Heart of Albion.

be a wolf and thus acts like a wolf by howling, eating raw meat, barking, running around graves at night and the like (Summers 1966; Otten 1986).

Historians have speculated that ergot poisoning, which is suspected of causing some witchcraft hysteria, also may have been responsible for some episodes of lycanthropy. Ergot is a fungus that grows on rye and other cereals that were staple foods in the Middle Ages, and it grows well in climates with moist atmospheres. Acute compulsive ergotism was common in Europe (Stone 1994). Ergotism (also known as St. Anthony's fire) produces vivid hallucinations, tremors, rolling eyes, speechlessness, uncontrollable appetite, panic attacks, delusions, itching and tingling, extreme thirst, swelling and blistering of the skin, and wry neck (Stone 1994).<sup>121</sup> The symptoms of ergotism resembled those of lycanthropy and also those of rabies.<sup>122</sup>

Lucas Cranach der Ältere (1512) depicts a werewolf that looks more like a Wildman than a wolf. His werewolf is a hairy man whose primary wolf-like attribute is his position on all fours carrying a human child in his mouth; chaos unfolds around the werewolf as people run in terror amongst several bodies that lie ripped to shreds on the ground (Figure 5.6). This depiction supports the idea that werewolves were not always physically transformed into wolves and is a further blending of the boundary between human and non-human animal.

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<sup>121</sup> Lysergic Acid Diethylamide (LSD) is synthesized from ergot fungus. ---. 1994. Hellhounds, Werewolves and the Germanic Underworld. In *Mercian Mysteries*. Marlborough, Wiltshire, UK: At the Edge/Heart of Albion.

<sup>122</sup> Etymological links have been cited between werewolves and ergotism. Ergot is sometimes known as *Wolf* of *Wolfszahn*, which means, "wolf-tooth", *Beowulf* is commonly translated as "Barley-wolf", and there is a possible link between *ergot* and *warg*, (warg are mythical Norse wolves). Ibid.



Figure 5.6 “Werwolf”, Lucas Cranach der Ältere, 1512.

Boundary blending became useful in explaining particularly sub-human behavior, and this was the case with perhaps the most famous werewolf: German Peeter Stubbe.<sup>123</sup> Stubbe had reportedly practiced evil deeds since he was a youth. He confessed to murdering thirteen children, two women, and one man as well as committing incest with his daughter and sister and killing his own son. Stubbe said he became a werewolf after making a pact with the devil and wearing a girdle the devil gave him. Stubbe was captured, tried, and tortured in 1589. He was publicly burned with hot tongs, his limbs were broken on a wheel, he was decapitated, and his body was burned (Summers 1966;

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<sup>123</sup> Peeter Stubbe is also referred to as Peeter Stump in the literature.

Otten 1986). Stubbe's trial and execution were documented in writing, and artistic renditions of his life and torture were circulated throughout Europe (Figure 5.7). The rapid dispersion of the narrative was facilitated by printing enabled by the Guttenberg Press (invented approximately 1440).



*Figure 5.7. The Life and Death of Peter Stubbe – woodcut, Nurnbera 1589*

Varying narratives circulating about Stubbe's life and death emphasized different things; some reveal overtones of civic discontent while others deal with the incident spiritually and philosophically (Wiseman 2004). The case of Stubbe begs a link between human serial killers and werewolves. Such abhorrent behavior was considered sub-moral, sub-rational, and sub-human (Otten 1986). It was also recognized as beyond the nature or ability of the wolf (Baring-Gould 1894). The attribution of actions by the likes of Stubbe

to a supernatural human-wild animal hybrid was possibly a way of socially managing the need to reinforce the civility of humans.<sup>124</sup>

Science essentially dispelled werewolves and other mythological creatures. Without a supernatural explanation, perpetrators of unsavory human behaviors (ranging from jovial rumpuses to violent crimes) thereafter were deemed simply “animals” (Elder, Wolch and Emel 1998). Unsavory human characteristics and behaviors were frequently ascribed to predators in folklore and fables. Fables including *Little Red Riding Hood* (Perrault 1697) and *The Three Little Pigs* (Halliwell-Phillipps 1886) present the wolf (who is usually male and in men’s clothing) as the archetypal villain, while humans and farm animals are presented as the victims or heroes who overpower, or otherwise outwit the wolf.<sup>125</sup> Fables were meant to teach lessons about humanity, and animals in fables were meant to be representative of humans. However, ascription of human qualities onto animals in fables has led to misconceptions about the corporeal animals. Representation of wolves in fables is not done at the species level (i.e. there is not a pack of wolves chasing Little Red through the forest). Nevertheless, the actions of one animal (that one big bad wolf) are transferred to all wolves. The wolf of fairy tales and fables has been the subject of much critical analysis, and has been likened to constructs of sexual predators, seducers, psychopaths, and fools (Pluskowski 2006).

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<sup>124</sup> Sociologist Denis Duclos argues that postmodern American society has invented serial killers that do not fit any kind of social norm, those whose crimes are incomprehensibly abominable, and this allows the public (via media) to turn its attention to freak criminals instead of paying attention to mass social crime in the form of poverty, war and civil unrest. He calls this obsession with fear and violence “The Werewolf Complex”. Duclos, D. 1998. *The Werewolf Complex: America's Fascination with Violence*. New York: Berg.

<sup>125</sup> Little Red Riding Hood is fairy tale of unknown roots, first published by Charles Perrault as *Le Petit Chaperon Rouge* in 1697. Ashliman, D. L. 2013. Charles Perrault's Mother Goose Tales. In *Folktexts*. D. L. Ashliman.



Though neither human nor wolf, the werewolf evokes powerful imagery, and in the absence of a corporeal wolf to ground reality (after extensive European extermination), the qualities of the werewolf were transferred to the wolf, such that the wolf has been reconstructed as a mythically vicious and deceitful trespass predator that kills needlessly and wastefully for fun, not survival (Emel 1998). Wolves do sometimes (as do numerous other species) kill more than they can eat, a phenomenon called “surplus killing”. Surplus killing by wolves is rare, and is attributed to a variety of predator and prey survival behaviors as well as environmental conditions (Sand et al. 2014).<sup>126</sup> Surplus killing is often characterized in contemporary media as “killing for fun”, perhaps a response to the romantic narrative of a perfectly balanced Nature in which nothing goes to waste. This wastefulness for which wolves are denigrated is strangely rationalized in human populations: A full third of world food produced is spoiled or wasted before human consumption (Food and Agriculture Organization of the United Nations 2018), despite a globally recognized food shortage narrative in conjunction with narratives on world hunger. The global tolerance of this condition in human sustenance behavior is

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<sup>126</sup> Surplus killing can occur in response to behavioral change in prey, such as weak anti-predator response, and in response to environmental conditions such as a harsh winter necessitating a form of foraging in which wolves consume only the most nutritious parts of easy and accessible prey while avoiding risk of human detection. It is also related to prey density and tends to happen when a large and vulnerable herd presents a sort of smorgasbord opportunity that wolves occasionally encounter with wild ungulate herds. Sand, H., P. Wabakken, O. Liberg & H. P. Andreassen. 2014. Predator-dependent functional response in wolves: from food limitation to surplus killing. *Journal of Animal Ecology*, 84. This kind of opportunity is presented more frequently by concentrated livestock herds. While wolves may appear to abandon their surplus kills, they often return to kills with other members of the pack to continue feeding if there is a low risk of human detection and if carcasses are not removed by livestock or wildlife managers. Mech, D. L. & L. Boitani. 2003. *Wolves: Behavior, Ecology, and Conservation*. Chicago: University of Chicago Press. Other carnivores who are scavengers, not predators depend on kill remains left by wolves in the wild.

reinforced by the idea that humans are not a part of Nature, and by extension are not expected to follow “natural” rules of order.

Representations of Nature, the wilderness, and wild animals in art and literature over the long period of the Middle Ages reflect and reconstitute narratives of changing cultural and philosophical positionings in the context of changing power structures and physical landscapes. In the Middle Ages, boundaries were explored, drawn and challenged in representation of human metamorphosis and hybridity in the werewolf and the wild man, which intersected with the spiritual boundary between good and evil, the temporal boundary between day and night, and the geographical boundaries between cities, villages and wilderness areas. The attributes of the werewolf were ascribed onto the corporeal wolf and the wolf has become a functional mediator of these boundaries, which are still negotiated today, albeit less explicitly.

Werewolf narratives survive, but contemporary depictions of the werewolf reflect changing culture, science and technology, as well as rising critique on human animality and human alienation from Nature. Werewolves of the traditional sort in 20th and 21st century film, literature and art are often contextualized as victims, perhaps mirroring the wolf-as-victim narrative that arose during this time period along with human-animal identity and wilderness conservation narratives. Mediation of the human-technology boundary has generated a werewolf counterpart: the cyborg. The cyborg symbolizes the human extension into the mechanized world in the way that the werewolf symbolizes the human extension into the animal or wild world. The werewolf of today looks more like Marvel Comics’ anti-hero “Wolverine” of the *Avengers* (1974) and *X-Men* (1988), a human mutant with retractable knife claws who fled to the wilderness to live amongst

wolves, and can be compared to James Cameron's titular *Terminator*, a cyborg that looks like a human but its objective is human destruction (Cameron 1984). Today as our wilderness contracts and our wildlife disappears, phenomenological experience of the wild is at risk, potentially further alienating people from nature. Contemporary fears and social discontents are perhaps better served by the cyborg, which has no natural history (Haraway 1991).<sup>127</sup>

### 5.5 Modern Era Wolf Narratives

Though negative narratives of the wolf persist, wolf narratives have become more varied and complex, and alternative narratives are increasingly salient. In addition to persistent "wolf as villain" narratives, narratives have emerged that contextualize wolves as friends, martyrs, and heroes. Today, wilderness in Europe and in the U.S. is highly contracted, and a trend toward urbanism has limited direct experience with wildlife and wilderness. Most people have no direct contact with wolves and have never seen or even heard the sound of a wolf in the wild. Even those who live in geographic landscapes inhabited by wolves, rarely experience seeing a wolf. Yet, the narratives embedded in the cultural fabric of the West engender passionate contemporary expressions (pro and con) about wolves, wolf hunting, wolf conservation and wolf reintroduction programs in Europe and in the U.S. (Linnell et al. 2002a; Pluskowski 2006; Travers 2014a; Travers 2014b).

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<sup>127</sup> The cyborg turns Descartes' separation of humans from animals on its head by making humans into machines, the very thing that made other animals inferior for Descartes. Haraway, D. 1985. A Manifesto for cyborgs: Science, technology, and the socialist feminism in the 1980s. *Socialist Review*, 65-107.

### 5.5.1 The Modern Wolf Villain

In the 21st century, negative narratives of wolves continue to be produced, that contextualize negative human qualities as the qualities of wolves or exaggerate the murderous nature of wolves. The movie *The Grey* (Carnhan 2011), tells the story of a group of plane crash survivors pursued relentlessly through the Alaskan wilderness by ravenous wolves that pick them off one by one. The film is rampant with sensational misrepresentations of blood thirsty wolf behavior and depicts wolves at twice their normal size. The film's release coincided with the removal of ESA protections for gray wolves in some states, and was highly criticized by conservation biologists and conservation groups, some which mounted formal campaigns in protest against the film (Lynch 2012). News that director Joe Carnahan served wolf meat to the cast in order to aid their character development drew increased criticism (Child 2012). Another wolf attack film, *Frozen* (2010), chronicles a weekend of terror, over which a group friends trapped at a New England ski resort try to escape ravenous wolves (spoiler alert: in true modern horror film fashion, only the girl gets out alive) (Green 2010).

Stock market scammer Jordan Belfort's memoir *The Wolf of Wall Street* (tracks the manipulative, greedy and excessive behavior of Belfort that eventually led to his imprisonment (Belfort 2007). The book exemplifies the continued ascription of negative human characteristics and behaviors to the wolf, and the subsequent back ascription of those characteristics from wolf to human in order to deflect the idea that these unsavory qualities might actually be normal in humans. The book was adapted to film by Martin Scorsese in 2013.

Other contemporary narratives play with the ambiguity of wolves as good or bad. Angela Carter's 1979 short story *The Company of Wolves* puts a spin on the classic *Little Red Riding Hood* by presenting the wolf as a werewolf who eventually converts Little Red into a werewolf after which she disappears into the forest with a pack of wolves. The fairy tale is presented as a dream sequence in which the main character wakes to the reality of a real pack of wolves bursting into her house (Carter 2015 org. 1979). This book was made into gothic horror film in 1984.

Sergei Prokofiev's narrated children's symphony *Peter and the Wolf* (1936) pairs the sounds of musical instruments in the symphony to the qualities of animals in the story. The narrator tells of a boy who spars with a wolf, eventually captures it with the help of hunters and takes it to a zoo. The narrative highlights the boy's virtues of vigilance, bravery, and cunning to outwit the wolf. Prokofiev's wolf is portrayed as sneaky, vicious, tenacious and foolish, but the sparing between boy and wolf is portrayed as a game of wits between the two. This extremely popular classical piece has bound the sound of French horns to the nature of the wolf in the minds of children and adults alike over many generations. Subsequent variations of this narrative highlight the boy's developing respect for the wolf and eventual release of the wolf back into the wild.

### 5.5.2 The Wolf as Friend

Several companion narratives have been influential in improving the reputation of wolves. Jack London's *White Fang* (1906), is the story of a wild wolfdog living in the Yukon Territory who becomes progressively more domesticated through a series of life events. This narrative characterizes the wolf as victim, hero and friend. Throughout the

story, White Fang is captured, abused and exploited by various human owners and suffers the stigma of being a wolf amongst dogs. He lives a life of abuse until he eventually ends up in the care of a friendly human who takes him to California to live out his life in domestic luxury (London 1991 org. 1906). This narrative is particularly interesting for several reasons: 1.) The story is told from the wolf's point of view and chronicles the perceptions and feelings of White Fang as he goes through all of his life's trials. 2.) White Fang is not characterized negatively until after he is introduced to domestic dogs, which bully him into becoming a vicious creature full of rage. It is his persecution that makes him savage. 3.) The book thematically mirrors London's earlier and best-known work *The Call of the Wild* (1903), in which a domestic enslaved sled dog, becomes free in the wilderness and survives by tapping into his wild instincts until he eventually becomes a wild wolf leader.

In Michael Blake's *Dances With Wolves* (1988), a tormented American Civil War Lieutenant surviving alone at an outpost gets his titular "Indian name" from a Lakota band due to his special affinity for a wolf that continually visits his outpost. The book was made into a highly successful film by Kevin Costner in 1990. While not centrally about the wolf, the film's portrayal of a wolf as benign was a powerful counter to dominant narratives of wolves at the time.

A recent wolf companion narrative film *Alpha* (Albert Hughes 2018), tells the story of how a heroic friendship between a boy and a wolf navigating the turmoil of the Pleistocene epoch eventually leads to dogs becoming "man's best friend" (Figure 5.8).

### 5.5.3 The Wolf as Martyr

After the onset of intensive wolf eradication in the U.S., a counter narrative emerged of the wolf as a victim or martyr. In *Wild Animals I Have Known* (1898), naturalist Ernest Seton-Thompson delivered narratives of individual animals, with an explicit goal to push against vague,

general treatment of animals. Seton-Thompson states: “the real personality of the individual, and his view of life are my theme, rather than the ways of the race in general, as viewed by a casual and hostile human eye (Seton-Thompson 1900 org.1898, 9-10).” He tells a tragic and romantic true tale of “Lobo: King of Currumpaw”, an alpha wolf in New

Mexico who with his band terrorized cattle and cattle ranchers, killing only the finest cattle: “An old bull or cow they distained

...veal and horseflesh was not their favorite. It was known they were not fond of mutton, although they often amused themselves by killing sheep (20)”. His story recounts the heroic life of Lobo, his consistent outwitting of the author and other hunters and his undying love for his mate. Seton-Thompson recounts in detail, his pursuit of Lobo, and how he eventually was able to kill him only by way of destroying his spirit through killing his mate. Seton-Thompson’s narrative reflects on the loss of the wolf loss in terms



Figure 5.8. Publicity poster for *Alpha* (2018) juxtaposes the boy and the wolf’s hybrid identities and destinies: The boy survivor who navigates the wild through his identity with a wolf, and the wolf survivor who sheds the wild through her identity with the boy.

of human loss, as he confesses the tragic feeling he “shrank from (Seton-Thompson 1900 org.1898, 46)” after killing Lobo.

The wolf as martyr narrative was catapulted by Aldo Leopold’s seminal environmental essay “Thinking Like a Mountain” in which Leopold recounts opening fire from a distance on a mother wolf and her pack of playful pups. Leopold recounts the maiming of the pups, the death of the mother wolf, and the remorse that sets in as he watches “a fierce green fire dying in her eyes (Leopold 1970 org. 1949, 138-139)”. That dying green fire was the catalyst for Leopold’s environmental ethic that has become a prominent environmental narrative. Like Seton-Thompson’s Lobo, the wolves in Leopold’s narrative were Mexican wolves, likely shot in the Gila wilderness where reintroduced Mexican wolves now roam. This powerful narrative serves to martyr the wolf that died for the environmental sins of humanity. By extension, the historic barbaric treatment of Mexican wolves and their final eradication positions reintroduced Mexican wolves as victims of history; descendants of a mother wolf whose death is vindicated by their flourishing.

#### 5.5.4 The Wolf as Hero

A more recent counter narrative positions the wolf as a functional hero. Conservation scientists have long been aware of the importance of apex predators in a well-functioning ecosystem, but it took a beautifully romantic video written, directed, and narrated by British environmental activist George Monbiot, to turn this scientific knowledge into a powerfully viral social narrative. Monbiot’s 4.5 minute film *How Wolves Change Rivers* illustrates a trophic cascade by telling the story of how



reintroduced wolves restored an ailing Yellowstone National Park (Monbiot 2014). The film illustrates the wolves' pivotal role in a trophic cascade, in which wolves (previously eradicated from the park) returned to prey on the ungulate population that had problematically boomed in their absence. The return of wolves caused a cascade of effects that allowed Yellowstone to recover ecologically and even changed the riparian landscape of the park. This narrative positions the wolf as an unwitting hero, returning from the brink of extinction to restore the balance to a landscape destroyed by short-sighted humans. In this narrative, the wolf returns to give a second chance to humanity.<sup>128</sup>

This video had been criticized as a romanticized, exaggerated account of positive wolf environmental impact (Middleton 2014). Noted wolf biologist David Mech argues that despite the ecological importance of wolves, that exaggerated pro-wolf narratives compromise science, and that leveraging romantic wolf narratives effectively sanctifies the wolf and perpetuates misunderstanding of the corporeal wolf (Mech 2012). Numerous books on wolves and wolf conservation take scientific or critical approaches to wolves, but these narratives come before much smaller audiences.

#### 5.5.5 American Indian Wolf Narratives

Wolves are spiritually and materially significant to many Indian tribes and the wolf is a common clan totem. They figure in many creation stories and in some tribes are ascribed the status of gods. The wolf is broadly associated in American Indian cultures with strength, loyalty and courage (Native Languages of the Americas 2015). American Indian wolf and werewolf legends and myth are overwhelmingly more positive,

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<sup>128</sup> In some ways the wolf as victim/martyr/hero narratives parallel Christ narratives.

frequently positioning the wolf as a spirit guide, war guide, and healer (Native Languages of the Americas 2015).<sup>129</sup> Though many Indian wolf narratives potentially outdate those from the Medieval Europe, Indians have had little social agency since European settlement in the Americas, and their narratives consequently lack power.

## 5.6 Modern Era Wilderness Narratives

The modern era generated narratives of the wilderness as a place of wonder and discovery. *Things in the Forest* (1894) retells a collection of wildlife tales for a young audience, including “Being Lost in the Forest”, a tale of a lost soldier “trespassing on the domain of beasts and birds and reptiles” (Kirby and Kirby 1894, 42). This book includes a collection of beautifully detailed engravings, and while it contextualizes forests as dangerous and a place that humans do not belong, the book’s stories reflect a fascination and appreciation for wildlife both dangerous and benign. *Wild Kingdom* (Bourgeois and Gavin 1963-1985) brought wildlife (and people) from distant parts of the world into millions of American homes, and this increased interest and value in global wildlife.<sup>130</sup> Jacques Cousteau (1910-1997) inspired inspiration for protecting oceans with his adventure books and his television series *The Undersea World of Jacques Cousteau* (Cousteau 1968-1976). The movie *The Life and Times of Grizzly Adams* (Sellier 1974), is

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<sup>129</sup> A popular parable, “Two Wolves” which teaches about choosing between good and bad depending on which “wolf” you feed is commonly attributed to Cherokee legend, but has been criticized as wrongly attributed to any Indian tribe, an outgrowth of romanticized Indian wisdom narratives. âpihtawikosisân. 2012. Check the tag on that “Indian” story. <http://apihtawikosisan.com/2012/02/check-the-tag-on-that-indian-story/>. (accessed 31 August 2019).

<sup>130</sup> The show came under criticism after a Canadian Documentary company “Cruel Camera” claimed the show staged some of its animal rescue scenes or animal fights. Numerous other production companies, including Disney were accused by Cruel Camera for abusing animals to get their shots. Corry, J. 1986. 'Cruel Camera': About animal abuse. In *The New York Times*. New York: The New York Times.

the story of a fugitive, wrongly accused of murder who flees to the wilderness where he befriends numerous animals and lives in harmony with nature.<sup>131</sup> This “getting back to nature” film was released one year after the ESA was enacted, at a time when a new era of the American environmental movement was gaining momentum. The success of wildlife programming from the 1960s through the 1980s inspired entire networks dedicated to wilderness, wanderlust, and celebration of wild animals including *Nature*, *Discovery Channel*, *Animal Planet*, and *National Geographic Channel*, launched in 1982, 1985, 1996 and 2001, respectively.<sup>132</sup>

#### 5.6.1 The Earth in Balance

Narratives about wolf identity are enmeshed in narratives about the nature of Nature. The functional hero identity of the wolf is directly related to a conception of nature as “balanced” or in a stable state of equilibrium in which one change (such as a deer population boom) is corrected by another (for example, increased wolf population) such that Earth can always “find its own balance”.

The perception that nature is balanced or functions to maintain its own balance is ancient and has remained persistent in the West. Ecologists now largely agree that Earth is not in a natural state of equilibrium. Rather Earth’s natural, normal state is chaotic, constantly fluctuating, and punctuated by extreme events that cause dramatic fluctuations.

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<sup>131</sup> The film, loosely based on the life of a California mountain man John Adams (1812-1860) who trained grizzly bears and captured animals for zoos, circuses and menageries, was later made into a television series.

<sup>132</sup> Post-cable television, with vastly expanded networks enabled the creation of networks dedicated to a particular viewing interest, such as sports, news and nature programming.

Despite chaotic nature being a decades-old view amongst ecologists, the balanced Earth narrative still permeates popular culture, and at least as of 2007 was still broadly reinforced in K-12 education in the U.S. (Zimmerman and Cuddington 2007).

This balanced Earth narrative has two opposing operations: 1.) It positions Earth as robust, capable of withstanding any trauma, and able to self-correct, thereby implying that resource extractive practices do not have a lasting impact on the health of an ecosystem; and 2.) It positions Earth as fragile and in a delicate balance that could easily be disrupted, thereby implying that resource extraction, development activities, and even human presence in nature are threats; potentially throwing Earth out of balance (Zimmerman and Cuddington 2007). The balanced Earth narrative, and the related operational views of human impact (or lack thereof) on ecosystems have typically conceived humans on the outside of the natural system. Therefore, humans either have no lasting impact on the system and the system no lasting impact on humans; or humans are invasive and disruptive and stand to suffer the consequence of disruption.

Human impact on the planet is unequivocal, but as there is no normative state of equilibrium, there is significant uncertainty on the degree and irreversibility of human impact. This makes the conservation imperative less straightforward, more difficult to communicate to the public, and more vulnerable to special interest misrepresentation.

### 5.6.2 Nature as Dangerous

In contemporary narrative, evil still lurks in the woods, which are a favorite setting for horror movies. Despite the emergence and promise of narratives conceptualizing wilderness as wonderful, sublime, restorative, or vital to human

survival, old narratives die hard. Like the wolf of the Middle Ages, the wilderness of old has survived in the American consciousness, and contemporary narratives continue to portray wilderness as a dangerous place where bloodthirsty animals, dangerous people, fantastic beasts, or aliens will attack. Science fiction creature-based movies popular between the 1930s and '50s featured bizarre animal and hybrid creature villains. These movies remained popular through the 1980s, and many are now considered cult classics.<sup>133</sup> Animal attack movies were popular in the 1970s and '80s. Predators of all sorts from various natural environments were villainized in films like *Jaws* (Spielberg 1975), *Grizzly* (Girdler 1976),

*Razorback* (Mulcahy 1984), and *Cujo* (Teague 1983), featuring killer animals (sometimes endowed with supernatural powers) on 90-minute killing sprees (Figure 5.9).

Interestingly, these films all have singular titular names for their killers, which sums up the complexity of predator representation in these films.

Tapping into cultural fear of wilderness,



Figure 5.9. A publicity poster for *Grizzly* (1976) features an 18-foot tall man-eating grizzly terrorizing a group of unfortunate campers.

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<sup>133</sup> Prior to the widespread access to VHS home video in the 1980s, films had to be seen in theaters or broadcast on television, and prior to the expansion of cable television, there were limited television networks. Thus, classic movies were recycled repeatedly on a few television channels and were widely viewed simply because viewer choice was limited. This widely shared viewership across several generations contributed to the persistence of damaging wildlife and wilderness narratives, and to cult status of many of these films have achieved.

Stephen King, who authored the novel *Cujo* on which the film was based, frequently set his supernatural thrillers in isolated wilderness or on the fringe of rural villages. King was an immensely popular writer in the late 20<sup>th</sup> century, and many of his novels became cinematic blockbusters, reinforcing the dangerous wilderness narrative.

The extremely popular film, *The Blair Witch Project* (Myrick and Sánchez 1999), capitalized on the idea of wilderness as a haven for witches, and reignited the demonic wilderness narrative. The film centers around the “recovered” footage of three student filmmakers who went missing in a Maryland forest while shooting a film about the (fictional) legendary Blair Witch. This film consists of chaotic hand-held video footage that chronicles their interaction with an unseen entity, presumably the Witch, which leads to their mysterious disappearance.<sup>134</sup>

### 5.6.3 Nature as Criminal

The wilderness of the Israelites was a desert, and contemporary portrayals of the desert differ little from the barren, harsh, tempestuous biblical wilderness, positioning the desert as a wasteland where one will become lost or where “lost” people end up. However, American desert wilderness has distinct narrative characteristics. The storied American desert is a place where cowboys and Indians kick up dust, criminals manufacture and run drugs, gangsters bury bodies, and yes, aliens await. Whereas incredible biodiversity is associated with narratives of forests, especially rainforests,

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<sup>134</sup> The legend itself was fictional, and the film’s actors were originally listed as “missing” or “deceased” as part of the marketing campaign for the film.

animals and plants in American desert narratives are typically limited. The Sonoran Desert is one of the most biodiverse ecoregions in the world. Though its endemic Saguaro cactus is iconic, few other cacti and succulents are acknowledged, and they are often depicted as solitary plants in a sea of dust. Scorpions, rattlesnakes, and coyotes, make frequent appearances in desert narratives, and the jack rabbit and roadrunner endure (albeit highly distorted) through the long running animation of *Looney Tunes* (Avery et al. 1930-2018), but the biodiversity of the desert is vastly overlooked.

Zane Grey (1872-1939) idealized the American frontier and his highly successful novels, many made into films and television productions, were a major narrative force in shaping images of the American West (Rivera 2016). By the 20th century the deserts of the Southwest were the last frontier in the contiguous U.S., so this era of western narratives was frequently backgrounded on desert landscapes. Western narratives typically featured nomadic gun fighting cowboys, Indians, rustlers, soldiers, and bounty hunters as well as farmers, ranchers and townsfolk living out stories of revenge, lawlessness, law enforcement, and struggle for survival, or they featured plots for extension of civilization through railway or other infrastructure construction in desolate lands. Western television shows and films were extremely popular in the 1930s, and western pulp fiction by numerous authors was produced abundantly for several hundred western pulp magazines active through the 1940s (Dinan 2003) (Figure 5.10).

The large amount of Department of Defense lands in the desert contributes to narratives of the desert as a place for alien landings, abductions, and government cover-ups. Desert gangster narratives such as *Casino* (Scorsese 1994), *No Country for Old Men* (Coen and Coen 2007), and the series *Breaking Bad* (Gilligan 2008-2013) position the

desert as a place for committing crimes and hiding crimes already committed: “A lot of holes in the desert, and a lot of problems are buried in those holes”, quoth Joe Pesci’s character, gangster Nicky Santoro in *Casino* (Scorsese 1994).

Despite biblical narratives placing God in the desert, the American desert has not been popularly contextualized as sublime like American wooded or mountainous wilderness. Though John C. Van Dyke’s *The Desert* (Van Dyke 1904) and Edward Abbey’s *Desert Solitaire* (Abbey 1968) made some headway in changing the popular desert aesthetic, portrayals of desert living are more commonly of the reclaimed desert in places such as Palm Springs and Las Vegas where one can enjoy civilized pursuits of poolside luxury and golf.<sup>135</sup>

### 5.7 Landscapes of Fear

Narrative discourse situated contextually within an environment can spur dramatic material action. Residents living in the Mexican wolf recovery area have posted graphic warning signs about wolves, and the rural community of Reserve, NM erected wooden and chicken wire “kid cages” at school bus stops to protect children from Mexican wolf attacks (Warren 2013) (Figure



Figure 5.10. Pulp fiction covers usually featured gunfights, scantily dressed women, or animal attacks.

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<sup>135</sup> The advent of film, then television, then the Internet have led to increasingly rapid production and broad distribution of narrative, so an in-depth analysis of contemporary wildlife and wilderness narrative is beyond the scope of this dissertation. Because I have not attempted an analysis of the full scope of film, television and Internet narrative, there are large gaps in the material I present on wildlife and wilderness narrative, and I acknowledge there are noteworthy omissions.



5.11). The material construction of barriers such as “kid cages”, as well as use of technology such as radio or GPS tracking, can purposely or unintentionally create “landscapes of fear” which are both psychological states and tangible environments that are perceived as dangerous (Tuan 1979). Tuan (1979) describes landscapes of fear as the “the almost infinite manifestations of the forces for chaos, natural and human” (Tuan 1979:6). A child that has no fear of or disdain for wolves can develop it based solely on narrative and the symbolic significance of a cage needed to keep them safe.



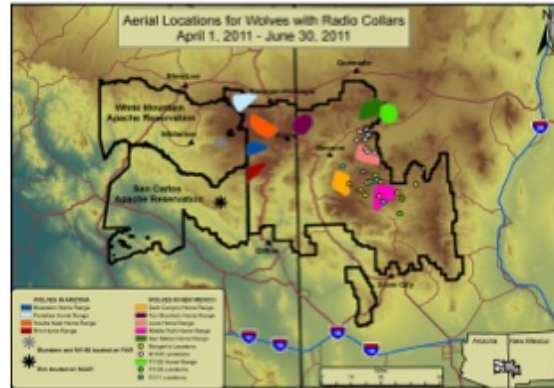
*Figure 5.11.* Reified wolf narratives. Locals in the Mexican wolf recovery have constructed provocative visual wolf warnings. Left: Graphic wolf warning signs posted in Reserve, New Mexico (Photo: Christina Selby); Right: Children pose in a bus stop “kid cage” in Reserve, New Mexico (Photo: Washington Times).

FWS uses radio telemetry to track movement of individual wolves and wolf packs, and the Agency once provided ranchers with wolf tracking equipment intended to help them know when wolves are near so they can move or closely monitor livestock. However, use of radio telemetry to track wolves has magnified fears in BRWRA communities. Satellite maps marking Mexican wolf locations resemble satellite maps revealing locations of registered sex offenders, commonly referred to as “predators” (Figure 5.12). Monitoring of wolves by local residents and daily knowledge of wolves

whereabouts fuels fear of wolves “lurking” in nearby woods, looking for opportunities to prey on people and pets. These fearful psychological states imbue negative predator discourses based not on Mexican wolf behavior, but on their existence, proximity, and their potential transgression of the civilization boundary.<sup>136</sup>



Radio collared and tagged, Mexican wolf F1213 (Photo: FWS)



Mexican wolf tracking map (Map: FWS 2011).



Registered sex offender GPS tracking device (Photo: Mark Harrison, Seattle Times)



Registered sex offender locator map (Map: Family WatchDog 2014).

*Figure 5.12* Predator mapping of humans and wolves. Mexican wolves are tracked and mapped using the same technology and visualization tools used to track and map registered sex offenders.

<sup>136</sup> It is also suspected that some who has access location information on wolves used it to located and kill wolves.

## 5.8 Conclusion

Cultural constructs of Nature, “natural” and “wild” have fluctuated over time, and the situated human within or outside of Nature has likewise shifted. Cronin (1996) posits that Nature in post-classical Western culture is the product of monotheistic religious tradition, and it is now presupposed in the West that Nature is “One Thing with One Name (Cronon 1996) (35)”. The construct of wilderness is the product of social organization of space, heavily influenced by economic, religious and political agenda. As such, perceptions of wilderness and the corresponding values attributed to wilderness in the West have ranged from wilderness as Eden, sanctuary, and a place in which humanity could be located (wilderness as something to value, honor or protect), to wilderness as wasteland and a place of evil in which humanity could be lost (wilderness as something to devalue, control or destroy) (Cronon 1995a). All of these wilderness conceptions embody a dualistic vision of the human as outside of the natural (Cronon 1995a). Mexican wolves are striving to exist within the liminal space between the constructed extremes of romanticized and criminalized wilderness.

Narratives are fed by phenomenological experience. Thus, physical landscapes become embedded in the narratives that define values, beliefs, and attitudes toward wilderness and wildlife and engender the behaviors that define and redefine conservation landscapes. These landscapes in turn become part of experience, which feeds new narratives in a continuous iterative (and often cyclical) process of wilderness and wildlife construction. Phenomenological experience of the wolf and the wilderness is increasingly limited, so wolf and wilderness experience-based narratives are likewise limited. This gives way to the dominance of older narratives.

The Catholic Church and sovereign kingdoms in the Middle Ages promoted powerful anti-wild and anti-wolf narratives in order to exact control over fringe dwellers; those who dwelled on the fringes of Christianity and the fringes of politicized hierarchical societies.<sup>137</sup> Though the founding of the U.S. was a rebellion against European political, social, and religious control, fear narratives about wilderness and wolves spawned in the Middle Ages remained in the consciousness of early settlers, and remain in the collective American consciousness. While positive narratives of wolves and of wilderness are becoming more salient today, they do not extinguish old narratives. Values, beliefs, attitudes and behaviors toward wolves and wilderness corresponding to anti-wolf and anti-wilderness narratives have resulted in disregard and exploitation of American wildlands and the relentless and savage extermination of wolves. These narratives infect contemporary wolf conservation efforts.

Narratives are essentially consumed, mapped onto our brains, regurgitated, modified, and reconsumed. Anthelme Brillat-Savarin in *Physiologie du goût : Méditations de Gastronomie Transcendante* (1826) wrote: “Dis-moi ce que tu manges, je te dirai ce que tu es”, or: “tell me what you eat, and I will tell you what you are” (Dursteler 2018).<sup>138</sup> We are, and the world is, the stories we tell. I would argue, it is impossible to understand the world’s problems independent of attention to the narratives they are grounded in.

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<sup>137</sup> This has perhaps engendered the long tradition of formulation and promotion of fear narratives by social and political powers in the U.S. There exist now, and did in the Middle Ages, counter narratives, but the counter is by definition less commanding. The lesser saliency of these counter narratives is perhaps reflective of the lesser agency of social groups maintaining or propagating counter narratives.

<sup>138</sup> This is the origin of the saying “You are what you eat”.

In this chapter I have attempted a substantial, but far from exhaustive, summary of the entanglement of wilderness and wolf narrative in the culture, social structure, and physical landscapes of Europe and the U.S., and I have demonstrated that the realm of wolf and wilderness conservation is political, mythical, cultural, biological, physical and spiritual. My goal is not to impose a negative value judgement on narrative, but to reinforce that narrative *is*, by illustrating its cultural and social embeddedness, its evolution, and the power of its ongoing transfer and mutation.

In the next chapter, I look at the roots of the human separation from nature and premise of human exceptionalism. I identify problems in conservation science and wildlife management that stem from foundational scientific assumptions; offer adjustments to the foundational logic; and discuss the promise of relational geography and post-human approaches to address conservation science deficiencies.

## CHAPTER 6

### [RE]ANIMATING AND [RE]ANIMALIZING CONSERVATION

#### 6.1 Overview

Over the last 100 years it has become well-established that humans rely on healthy natural systems. Despite this knowledge, human behavior including production and consumptive behaviors, trade practices, technologies, governance, and population dynamics continues to compromise natural environments (Pimm et al. 1995; IPBES 2019). As a result, Earth is experiencing its sixth mass extinction, characterized by rapid biodiversity loss and ecosystem degradation across terrestrial, freshwater, and marine ecosystems (IPBES 2019). Despite a rise in global efforts to protect wildlife and natural environments over the last 50 years, the rate of human-induced global environmental change has accelerated and continues to outpace conservation.<sup>139</sup> Policy, politics, governance, and economics, are oft-cited structural obstacles to wildlife conservation, but traditional conservation approaches are also failing because of inability to respond to the influence of values in human decision-making (Ehrlich and Kennedy 2005; Schultz 2011).

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<sup>139</sup> Contemporary conservation arguments are often couched in terms of economics and risk mitigation. Attempts have been made to assign economic value (natural capital) to ecosystems via the services that they provide to humans (ecoservices). Notable contributions include *The Stern Review* (2006), which analyzes the economics of climate change, attempting to quantify the economic costs of species extinctions, natural disaster, ocean acidification, sea level rise and other predicted compounded effects of climate change, as well as economics of mitigation of and adaptation to climate change. Stern, N. 2014, org 2006. *The Economics of Climate Change*. Cambridge: Cambridge University Press., and the *TEEB Report* (2010), which aims to bring nature into public mainstream thought, through illustrating the economic value of biodiversity. Sukhdev, P., H. Wittmer, C. Schroter-Schlaack, C. Nesshover, J. Bishop, P. ten Brink, H. Gundimeda, P. Kumar & B. Simmons. 2010. *The Economics of Ecosystems & Biodiversity (TEEB)* London and Washington: Earthscan.

Structural obstacles to wildlife conservation are justified and enforced by a utilitarian value orientation that conceives non-human animals as subordinate and Nature as subservient to humans (Teel et al. 2005). This orientation is grounded in a worldview that humans are categorically different from all other animals, and that humans are not integrated in the natural world. These precepts are functionalized in culture and institutionalized in society through narrative, and though discredited by science, they remain incoherently embedded in the philosophy and methods of science, and by extension they influence conservation research, wildlife management, and conservation law and policy. The application of these precepts reinforces narratives that hinder conservation, as science is the dominant epistemology in the West and the primary vehicle for wildlife conservation.

Re-evaluating scientific axioms can inform a more inclusive and unifying approach to conservation that minimizes human privilege and closes the nature-culture gap. Because science is a dominant epistemology, a new science narrative can operate as a vehicle for a value orientation shift from utilitarian to mutualism.

This chapter's critical reflection on status quo conservation argues that human-wildlife co-existence mandates reframing historical positionings of human and non-human animals in the foundational epistemology of science. In this chapter I explore the advantages and ethical implications of two conceptual shifts: 1.) The "de-bodying" of vitality such that the wild is understood as a network of life which all things move through, (Ingold 2006b; Ingold 2011), and 2.) The recognition of non-human animals as active, geographically defining subjects in their unique perceptual worlds (Whatmore and Thorne 1998; Whatmore 2002; Uexküll 2010 org. 1934). The former requires a shift from

understanding life as bounded, thereby *re-animating* Nature. The latter is facilitated by conceptualizing humans and non-human animals together as *animalia*, thereby conceptually *re-animalizing* the human. In re-animalizing the human, non-human animals regain the qualities formerly beyond the fray of animality, which allows for legitimate consideration of inter- and intra-species sociality, psychological states, emotions, rationality and individual and social agency within and beyond the realm of particular species. In re-animating Nature, life is recognized as unbound, unharnessed and continually becoming, thereby enabling closure of the nature-culture divide and advancing tolerance for co-existence.

This chapter deconstructs historical framings, explores how re-framings can upset long-standing power and control structures that broadly influence wildlife conservation, and examines the ethical implications of these conceptual shifts.

## 6.2 Modern Era Holistic Natural Philosophies

In the 19<sup>th</sup> and early 20<sup>th</sup> centuries holistic conceptions of the world were revisited with “man” placed as an integral part of nature. Von Humboldt wrote in *Kosmos* (1845-1847) of the world as a singular interacting entity and argued that mind, society, and culture were integral to the study of Nature (Walls 2009). Karl Marx and Frederick Engels also pushed against the notion of human exceptionalism and warned of the long-term consequences from short term exploitation goals. Engels wrote in 1884:

“... at every step we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside of nature—but that we, with flesh, blood and brain, belong to nature, exist in its midst, and that



all our mastery of it consists in the fact that we have the advantage of all other creatures of being able to learn its laws and apply them correctly (Engels 2007 org. 1884)’’.

Russian geochemist and philosopher Vladimir Vernadsky (1863-1945), writing in 1929, suggested that what is needed is a change in the *noosphere*; the sphere of human thought. Vernadsky posited that the Earth went through stages of evolution in connection with the life forms on it. Earth was not merely a place for living things, but life on Earth *was* Earth. He posited that the biosphere defined the geosphere and that human cognition (the noosphere) fundamentally changes the biosphere. He argued that changing the evolutionary course of Earth necessitated an increase in human consciousness and thought (Vernadsky 1998 org. 1926).<sup>140</sup> Vernadsky’s radical conception of the connected nature of Earth, life and consciousness predated James Lovelock’s Gaia principle by more than 50 years (Lovelock 2009, org. 1979). Lovelock was unaware of Vernadsky’s ideas at the time he formulated the Gaia Hypothesis (Lovelock 1988).<sup>141</sup>

These intellectual works were not only natural philosophies, but leveled critiques on industrialization and the move into a capitalist economy, which has perpetuated consumption as a means of fulfillment (Walls 2009; Williams 2010). Despite early attempts to shift anthropocentric thought, industry plodded forward, and holistic approaches were not really embraced by science until the mid-20<sup>th</sup> century when the

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<sup>140</sup> The term *Biosphere* was coined by Eduard Seuss. Vernadsky expanded the definition of the biosphere and constructed a theory of life around the concept.

<sup>141</sup> Along with other Russian thinkers and scientists, Vernadsky’s work was not broadly known in its time due to strained political relations between Russia and the West. It is also possible his work was suppressed because implications of his ideas were contrary to the industrial push in the first half of the 20<sup>th</sup> century. The first full English translation of Vernadsky’s *The Biosphere* was not released until 1998.

concept of *ecosystems* took hold.<sup>142</sup> The concept of the “ecosystem” as a community of interacting physical, chemical and biological processes in a given space and time was introduced by Linderman in 1942, but was refined by others and embraced by the scientific community in the 1960s (Willis 1997), strengthening understanding of rippling and cascading effects on the environment.

### 6.3 Late 20<sup>th</sup> Century Conservation Turn

The ecosystem concept gained saliency during an emerging wave of global environmental concern in the 1960s prompting an increase in wildlife and habitat conservation. This wave of environmentalism followed the release of Rachel Carson’s seminal book *Silent Spring* (1962), which linked the human use of pesticides to mass deaths of fish and birds and human disease including cancer (Gottlieb 1993). Carson’s work highlighted a reciprocal relationship between humans and the environment showing not only that human activity could cause environmental destruction, but that environmental destruction could endanger human health (Carson 1962), something Marx and Engels had highlighted over a hundred years earlier (Williams 2010).

The latter half of the 20th century saw a wave of environmental legislation globally and domestically. The U.S. passed the Wilderness Act of 1964, the Land and Water Conservation Fund Act of 1965, the National Historic Preservation Act of 1966, the Wild and Scenic Rivers Act of 1968, the National Trails System Act of 1968, the National Environmental Policy Act (NEPA) of 1969, and the Endangered Species Act

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<sup>142</sup> This is possibly due to social and political priorities of using science to advance technology of industry and war prior to the mid-20<sup>th</sup> century.

(ESA) of 1973 (NPS 2018c). Global environmental institutions soon followed. The United Nations Environment Programme (UNEP) was founded in 1972 (Johnson 2012), and in 1973 the United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was established (Fritz 2018). The United Nations Educational, Scientific and Cultural Organization (UNESCO) began designating biosphere reserves around the world in 1976 (UNESCO 2018b). From this time forward environmental conservation has remained a chief concern worldwide. Global conservation work has involved international collaboration and knowledge sharing. Thus, wildlife research and management approaches share similarities worldwide. However, global circumstances vary dramatically, and conservation must be tailored to localized social and cultural contingencies.

#### 6.4 Command and Control Conservation

The American conservation model was highly influential in establishing a global conservation standard. The American model is guided by the pretense that wilderness is pristine and that humans are not part of Nature, and therefore should be kept out of it (Cronon 1995b), and conversely, that wild animals, especially those considered predators or pests, should be kept out of human-settled areas (Philo and Wilbert 2000). Early global conservation efforts responded to environmentally damaging human behavior by establishing protected and managed reserves aiming to keep wildlife in and keep people out. These reserves were typically guided by technocratic, top-down, linear management frameworks that did not engage a wide range of stakeholders. Resting on the assumption of boundedness, parks were perceived to have controlled variables with measurable

predictability within the confined areas, and parks deployed technical fixes to retain control.

Genetic distribution and seed dispersal rely on the ability of wildlife to move and migrate (Reed 2004; Delaney, Riely and Fisher 2010). Biodiversity is important to carbon and water cycles and soil formation, and it provides resilience to environmental shocks including disease, flood, and drought that make humans vulnerable (Pimm et al. 1995; Fromm 1999).<sup>143</sup> The reserve model proved ecologically problematic because it artificially confines animals to reserve boundaries, limiting the ability for wild animals to disperse to find food and mates, and restricting the scale at which animals perform their respective regulatory functions in an ecosystem such as hunting, scavenging, seed dispersal, and pollination. The bounded reserve model works against the reality of dynamic, complex, open natural systems which have many uncontrolled and immeasurable variables. “Externalities” are in fact, not external, they are intimately part of what is going on inside of reserves.

This ecologically limiting model also proved socially problematic because it required expelling people from protected reserves (Kantor 2007; Schelhas 2010)<sup>144</sup>. The model suppresses local knowledge, social organization, management, rules and norms, and it disengages local people from the act of conservation. In lesser developed countries,

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<sup>143</sup> The concept of biological diversity (biodiversity) was introduced by Thomas Lovejoy in 1980. Biodiversity conservation has become a more salient issue over the last 50 years with the understanding that it is essential to human health and stability.

<sup>144</sup> In the U.S. most conservation takes place on public lands which Americans have rights to access. Resource extraction, grazing, hunting and other types of recreational use are permissible on many U.S. public lands. National parks and monuments are more stringently preservationist, and as discussed, their creation involved expelling Indians from park lands.

reserves must often be protected with militaristic defense of park borders, coercive conservation measures, and social repression (Schelhas 2010).<sup>145</sup> Ultimately, the model relies on boundary compliance, but wild animals do not stay in protected areas and people do not stay out of them, making controlled management an arguably futile endeavor. C. S. Holling and Gary Meffe criticized this “command and control pathology” for oversimplification of natural systems and resultant reduction of systemic natural variation. They argued the approach was unsustainable environmentally, socially, and economically (Holling and Meffe 1996).<sup>146</sup>

UNESCO Biosphere Reserves attempt a modified command and control approach to balance sustainable development with environmental conservation (Coetzer, Witkowski and Erasmus 2013). The UNESCO approach retains a heavily protected core where only researchers are allowed, surrounded by a buffer zone in which tourism, recreation, education and training take place. Controlled community development may occur on the edges of a buffer zone but is generally limited to the transition zone surrounding the buffer (UNESCO 2018a) (Figure 6.1). While the Biosphere model grants human access to transition zones, local support for the model has been spotty because in some areas the inaccessible core and buffer zones contain sacred sites, traditional hunting grounds, water supply or other important local resources. Locals can perceive reserve

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<sup>145</sup> In practice, the people kept out were often indigenous people, while reserves functioned as game reserves or tourist parks for the affluent. Millions of indigenous people were relocated or ejected from protected areas. Colchester, M. 2001. This park is no longer your land. *UNESCO Courier*, Pullin, A. S., M. Bangpan, S. Salrymple, K. Dickson, N. R. Haddaway, J. R. Healey, H. Hauari, N. Hockley, J. P. G. Jones, T. Knight, C. Vigurs & S. Oliver. 2013. Human well-being impacts of terrestrial protected areas. *Environmental Evidence*, 2, 1-41.

<sup>146</sup> As discussed earlier in this chapter, U.S. National Parks continue to exercise extreme control over landscapes and wildlife within park boundaries.

designation as an infringement on their rights to resources and in essence, their rights to being (Colchester 2001). While the aforementioned discussion is of global reserves, similar localized dissent is common in conservation of American lands and wildlife.

Biosphere Reserves were intended for research at the intersection of conservation and sustainable development (the latter a nascent concept in 1976 when UNESCO reserves were launched). Reserves were selected not only for their inherent biodiversity, but for their potential as research sites to provide ecological baselines against which human impacts could be measured (Coetzer et al. 2013). While *in situ* conservation was a goal for early Biosphere Reserves, their primary goal was to yield globally applicable research results, and this global focus sometimes disadvantaged locals. Since the late 1990s, Biosphere Reserves have taken a more interdisciplinary focus and solicited

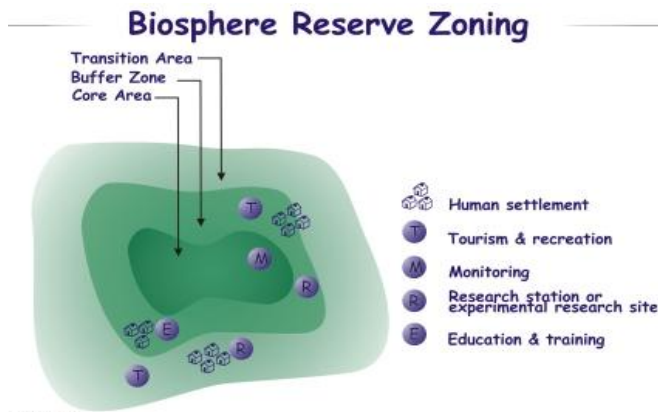


Figure 6.1. The UNESCO Biosphere Reserve model conceives of a core area in which only research and monitoring happen surrounded by a buffer zone in which human settlement and tourism activities are allowed and a transition area to the active human realm that protected wildlife theoretically does not enter. Source: (Fundy Biosphere Reserve 2017).

significantly more local input.

They also now undergo a structured review process (Coetzer et al. 2013).<sup>147</sup>

Biosphere Reserves (and even highly controlled national parks) have contributed to land conservation and protection of wildlife by addressing the immense

<sup>147</sup> There are currently 686 Biosphere Reserves in 122 countries, including 29 in the United States UNESCO. 2018. World network of Biosphere Reserves. <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/world-network-wnbr/wnbr/>. (accessed 14 March 2019).

pressures of human development and by enabling research that informs conservation globally (Coetzer et al. 2013). However, these kind of reserves are flawed by their isolating design and have had limited success in fulfilling the objectives of the Biosphere conceptual model (Coetzer et al. 2013). Biosphere Reserves, while they attempt to reconcile humans and Nature are still concentrically designed and bounded. They assume that the most important nature is at the core or the identification of the core essentially defines it as such. An unfortunate effect of this is that the farther from the core, the less important and more exploited nature becomes. Ecologically, this is problematic because the vitality in the core and the outer areas are connected and have varying dependencies on which resilience relies.

There is no standard size of an ecosystem. Ecosystems can actually be very small depending on the size and needs of the vital elements of the living community, but large terrestrial animals live in large ecosystems. This is especially true for animals that migrate due to seasonal changes or rely on large ranges to find food and mates. Animals can cover extensive areas in their migrations and ranges. For example, American pronghorn travel over 100 miles annually, navigating fences, highways and other human development to follow ancestral routes they have traveled for over six thousand years (Wildlife Conservation Society 2018). Mule deer can have even longer migrations. A single mule deer (doe no. 255) in a 2016 Wyoming-based study traveled an astounding 242 miles in one year (Benson 2018). Gray wolves can have territories as large as 50 square miles, but when prey is scarce their range may extend to as much as 1000 square miles, and wolves will disperse from their pack by as much as 600 miles looking for mates (FWS 2018b). Within these ranges, wolves will typically roam 30 miles in a single

day (FWS 2018b).<sup>148</sup> Other terrestrial animals have even larger ranges and migrations.<sup>149</sup> Many large terrestrial species are now threatened or extinct in the U.S. due to habitat fragmentation. Thus, in addition to sustaining ecosystems, reserves that aim to protect large terrestrial animals require vast amounts of contiguous space to sustain migration and range. While some animals are endemic to select locations, many animals exist or migrate between different ecosystems.<sup>150</sup> Therefore, inter-ecosystem connectivity, as opposed to just habitat connectivity, is an important conservation planning consideration.

The reserve model is typically unworkable in dynamic, complex, open natural systems with many uncontrolled and immeasurable variables, and because of the needs of large terrestrial animals, it is not realistically implementable in urban developed or developing landscapes due to habitat fragmentation and degradation. Habitat fragmentation results in ecosystem disturbances affecting wildlife distribution, breeding success, predator-prey dynamics, foraging success, and seed dispersal (Venier and Fahrig 1996; Fahrig 2003; Terando et al. 2014), leading to changes in species diversity that can disadvantage native species and influence local, regional or species level extinctions (Venier and Fahrig 1996; Reed 2004; Delaney et al. 2010). Urban development practices result in environmental degradation from structures, roadways, and utility corridors. As

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<sup>148</sup> Migration generally references seasonal movement, whereas range references a roaming area that is often covered year-round by an individual animal. Range can also refer to the general area in which a given species can be found.

<sup>149</sup> Wolverine home ranges can be larger than 560 sq. miles: FWS. 2018b. North American wolverine (*Gulo gulo luscus*). <https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A0FA#rangeInfo>. (accessed 15 November 2018). North American Caribou migrate distances greater than 3000 miles in single a year. ---. 2018a. Caribou. <https://www.fws.gov/refuge/arctic/caribou.html>. (accessed 15 November 2018).

<sup>150</sup> For migrating and wide-ranging animals, including Mexican wolves, their ability to exist in different ecosystems contributes to “not in my backyard” conservation attitudes.



populations grow, increased pollution and wildlife roadway mortalities accompany intensified roadway use (AZGFD 2012). Disruption of natural systems that filter pollutants, drain storm water, and absorb heat make human, animal and plant populations vulnerable to flooding, soil and water toxicity, disease, and heat waves (Terando et al. 2014).

While an attempt to reconcile conservation and development, the concentric Biosphere model still conceives of people as spatially separate from Nature, and this predicates a foundational problem in conservation in which human agenda is pursued independent of the environment. An alternative perspective is that people and wild animals do not need to be, and *should not be*, policed into separate areas. This perspective is no longer a mere philosophical approach, it is a conservation necessity. Over the last few decades, scientists have embraced landscape scale approaches to conservation to avoid the isolation problems facing concentric reserves and to address conservation in fragmented areas where reserves are not viable options.

## 6.5 Landscape Scale Conservation

As human population and development increase, large and intact natural landscapes are increasingly rare, and landscape scale conservation approaches must be used to link fragmented protected areas. Natural, extant wildlife corridors weave through human populated areas and often overlap with human occupied areas, effectively re-merging previously separated human and non-human spaces and forcing co-existence. However, the promise of coexistence is burdened by a dominant worldview that humans are separate from, and superior to non-human animals and that humans are separate from

Nature *writ large*. This view underscores a power narrative that non-human animals are subordinate, and Nature is subservient to humans; engendering a utilitarian value-orientation that is pro-exploitation and contra-conservation.

As human pressures increase, habitat for wild animals is degraded, reduced, and fragmented. Landscape scale conservation interventions may be the only viable conservation for large terrestrial species. Landscape scale approaches seek to protect core habitat areas with protected wildlife corridors that allow wildlife to migrate and range more broadly; thereby promoting species dispersal, connection of isolated populations, greater ecosystem function (Lambeck 1997; Sanderson et al. 2002; Linnell et al. 2005; Rabinowitz and Zeller 2010), as well as ability to adapt to climate change (Heller and Zavaleta 2009) (Figure 6.2). Scientists consistently recommend corridors as a priority means to protect the ability of species to adapt to climate change (Heller and Zavaleta 2009). With this approach,

scientists identify habitat requirements for key species vulnerable to landscape alteration and explore the best options for protecting the species' ecosystems throughout their range and migration paths.

Wildlife corridors are not created by conservation teams, rather they are defined by the

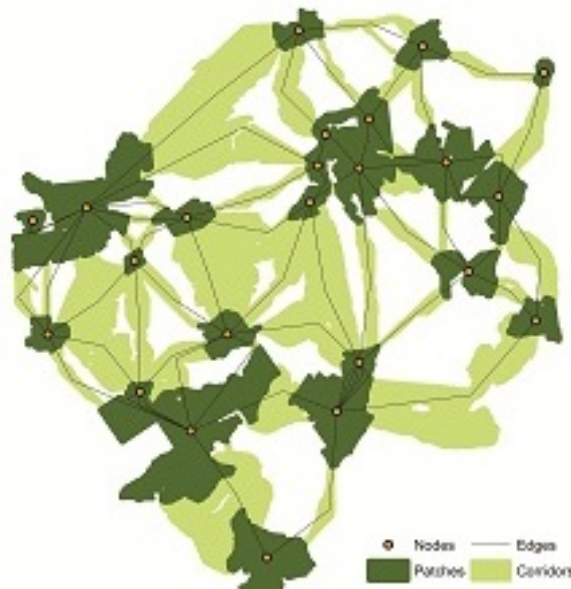


Figure 6.2: Landscape scale connectivity models like the one pictured above utilize buffered wildlife corridors to connect fragmented habitats. Source: (Rudnick et al. 2012).

animals themselves as they travel the same historical migration routes over hundreds or thousands of years.<sup>151</sup> Non-human animals have no regard for political and social boundaries. Wildlife flow through and between human developed rural and urban areas and through public and private lands. Animals must constantly contend with human development activities including mining, agriculture, ranching, damming, and urbanization, which create light and noise disturbance and affect predator-prey dynamics (Beier et al. 2008; Laurance et al. 2015). This negotiation happens at multiple relational and geographic scales influenced by the perceptions and behaviors of individuals and social groups.

Landscape scale conservation brings humans and wildlife into shared physical space, forcing reconceptualization of boundaries as meeting spaces instead of divides. The crux of the landscape conservation concept is that *vitality flows*, but that concept is not easily digested by policy makers and those who share space with wildlife. Shared human-wildlife landscapes are interdisciplinary, multi-sector efforts which require a high degree of cross-sector learning, planning, implementation and management that attends to both externally observable factors and the individual and social interior complexities of human and non-human-animal co-existence. Implementation and long-term efficacy of landscape scale interventions requires a fundamental shift in perception of human and

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<sup>151</sup> Ideally, corridors are preserved where animals are already traveling in their range or migration movements. However, the concept of wildlife corridors emerged in response to habitat encroachment and fragmentation caused by human development. Therefore, corridors and wildlife crossings are often patched together to mitigate problems created by roads and infrastructure and other development that already exists. Corridors and crossings created after development occurs require a learning curve for wildlife as animals become accustomed to the landscape changes and constructions such as funnel fencing that direct them to wildlife crossings.

non-human place and privilege in the landscape. It is widely recognized that this shift must happen in society. I argue that this shift must also happen in conservation science.

The sparsely populated landscapes occupied by Mexican wolves are not treated as protected reserves, but as landscapes co-habited by people and wildlife because these lands are national forest, wilderness areas, and other connected public lands that assume varying degrees of human presence. While Mexican wolves were first introduced in the very limited Blue Range Wolf Recovery Area (BRWRA), FWS has since expanded the Mexican wolf conservation landscape, now called the Mexican Wolf Experimental Population Area (MWEPA) to encompass the entire southern half of Arizona and New Mexico such that the conservation area reaches the Mexican border and connects Mexican wolves to the larger part of their historical range in Mexico. Mexican wolves also move through wildlife corridors that extend north from the Gila wilderness, across the Mogollon Rim to mountains near the Grand Canyon.<sup>152</sup> Maintaining range connectivity is an explicit goal of the Mexican Wolf Recovery plan (FWS 2017d).

The North American Model of Wildlife Conservation, while a conceptual model for wildlife conservation in the U.S. and Canada has its principal foundations in the Boone and Crocket Club.<sup>153</sup> The model is thus heavily focused on hunting ethics, but it

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<sup>152</sup> Though Mexican wolves have ranged in this northern area, the MWEPA does not extend that far, because it is not part of the historical Mexican wolf range. There is scientific disagreement over northern extension of the MWEPA because of concerns about potential premature and detrimental hybridization with northern gray wolves. Maintaining the purity of Mexican gray wolves is as much a political issue as a scientific one, because Mexican gray wolves maintain ESA protections based on their subspecies status. Odell, E., J. R. Heffelfinger, S. S. Rosenstock, C. J. Bishop, S. Liley, A. González-Bernal, J. A. Velasco & E. Martínez-Meyer. 2018. Perils of recovering the Mexican wolf outside of its historical range. *Biological Conservation*, 220, 290-298.

identifies science as *the* proper tool for deploying wildlife policy (Organ et al. 2012).<sup>154</sup> Scientific knowledge is privileged in decision-making and is a prioritized objective for state Game and Fish and U.S. Fish and Wildlife Departments (AZGFD 2018a; FWS 2018e). The following sections reflect on how the constructs of human exceptionalism and human separation from Nature are embedded in the foundations of the science on which wildlife conservation is based.

## 6.6 The Philosophy of Separation

René Descartes (1596-1650) is widely credited as the Father of Science for his principle reliance on doubt, objectivity, and reason to advance the study of nature. Descartes rebelled against the idea of *anima mundi*; the concept of a living and interconnected Earth, central to many earlier Greek and Roman philosophies. He perceived Nature as *nature*, a mechanical world of operating parts, which were void of feeling and detached from the human. He maintained that the soul and mind were unified, and thus the soul was rational, and that passion and instinct resided in the mechanized body. He posited that while the soul was separate from the body, it interacted with the body at the pineal gland, thereby connecting thought to bodily action.

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<sup>153</sup> Though Mexico is part of North America, the conceptual model focuses only on conservation in the U.S. and Canada due to commonality in wildlife conservation history, and social circumstances. Organ, J. F., V. Geist, S. P. Mahoney, S. Williams, P. R. Krausman, G. R. Batcheller, T. A. Decker, R. Carmichael, P. Nanjappa, R. Regan, R. A. Medellin, R. Cantu, R. E. McCabe, S. Craven, G. M. Vecellio & D. J. Decker. 2012. The North American Model of Wildlife Conservation: The Wildlife Society technical review 12-04., ed. Theodore A. Bookhout. Bethesda, MD: The Wildlife Society. (2).

<sup>154</sup> The North American Model of Wildlife Conservation is summarized in seven key properties: “1.) Wildlife resources are a public trust. 2.) Markets for game are eliminated. 3.) Allocation of wildlife is by law. 4.) Wildlife can be killed only for a legitimate purpose. 5.) Wildlife is considered an international resource. 6.) Science is the proper tool to discharge wildlife policy. 7.) Democracy of hunting is standard. Though Mexico is part of North America, the conceptual model focuses only on conservation in the U.S. and Canada due to commonality in wildlife conservation history, and social circumstances. Ibid.

Descartes famously asserted in his *Principles of Philosophy* (1644) “*ego cogito, ergo sum*”, “I think, so I exist”; a conclusion he came to after positing that we cannot doubt our existence if we have the capacity to doubt (Descartes 2017 org. 1644). Descartes considered radical doubt to be the first order of thinking, and therefore was essentially asserting: *dubito, ergo cogito, ergo sum* (I doubt, therefore I think, therefore I am). Descartes determined that non-human animals lacked souls and consciousness and were thus non-sentient automata (Descartes 2017 org. 1637). He assumed that non-human animals have no way to organize thoughts without interference of sensory experience because they have no language (language being a faculty of the soul), and that lacking reason, animals could not possess the doubt requisite to thought. Therefore, non-human animals could only act out of “passion”, a form of instinct (Melehy 2005). Through this process of (arguably circular) reasoning, Descartes crafted humans as the only rational, sentient, and soul-bearing beings in the world.

From this *apriori* position, Descartes advanced a deductive method of reasoning based in extreme skepticism that allowed a subject to isolate parts of nature as objects for study. Following his assertions that non-human animals were essentially machines, that humans were separate from nature, and that humans were superior to nature, Descartes concluded that humans may become “masters and owners of nature (Descartes 2017 org. 1637, 24)”. This declaration solidified the idea of human exceptionalism, a pretense rooted in biblical narrative and prevalent throughout the Middle Ages. The narrative of human exceptionalism, compounded by Descartes’ separation of soul and body, paved the way for science, as it was then free to explore the human body without damaging its

soul, and to “ethically” dissect the soulless, senseless, elements of the nature machine and its mechanical non-human animals.

Descartes spurred an intellectual shift from the acceptance of ambiguity that dominated the Middle Ages to the pursuit of intellectual certainty (Toulmin 1990). The Scientific Revolution replaced conceptions of an organic nature with those of a mechanized nature, and this has since promoted the hierarchical organization of life, an assumption of human control over the environment, and an authority (or even a mandate) for humans to tame or control nature. White men were privileged and women and non-whites were relegated to the margins of society (Merchant 1989; Leiss 1994).<sup>155</sup>

Descartes’ ideas institutionalized human exceptionalism in science, religion and society. Unlike hermetic practices of the times, which embraced passion and were viewed by the then-powerful Catholic Church as heretical, Cartesian science promoted an intellectual purity that was aligned with the purification agenda of the Church. While early scientists did not abandon esoteric traditions, the Cartesian view dominated discovery from the 17th century forward, because it was adopted by the situated powers of the Church and sovereign states in the 17th and 18th centuries, and corresponding capital-wielding powers thereafter.<sup>156</sup>

Cartesian philosophy separated that which resisted control from the rest of the human. This created a foundation for subjugation of the wild and by extension

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<sup>155</sup> Clarence Glacken asserts the concept of human utilization of nature as a moral and even divine right has been seated in human thought dating back to ancient Mesopotamia. Glacken, C. J. 1967. *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*. Berkeley, CA: University of California Press. However, this idea was reinvigorated when it converged with science and exploration in the 17<sup>th</sup> century.

<sup>156</sup> Francis Bacon and Isaac Newton, for example, are well known to have practiced alchemy.

subjugation of pagans in Europe and indigenous people in far-away lands. The notion that only humans had souls, and that those who lacked language were essentially animals was convenient for the Church, which was busy with military conquests in the Americas, Africa and Asia. In these new lands, indigenous languages were potentially perceived by explorers as nonsensical animal noise. Indigenous people were often called savages or beasts, terms used to describe people who lacked the prerequisites for civilized society (Abbattista 2018). These terms were used to legitimate subjugation of indigenous people to a “superior” European political or Christian authority (Abbattista 2018).

The acceptance of the Cartesian position that animals were unthinking machines incapable of feeling pain effectively denied moral status to animals. This view positioned exploitation of animals for science and industry as ethical. Descartes’ separation of the soul from the body and mechanized conception of nature not only allowed Descartes to avoid intellectual persecution by the Church, it allowed the Church to justify its domestic and foreign conquests as the work of God, and elevated efforts through the eighteenth century to bring order and control to the world, in particular to new worlds being discovered through extensive exploration, trade, and colonization. This is the basis for the subjugation of American Indians in the settlement of the West.

Exploration, trade, and colonization introduced new landscapes with plants and animals previously unknown to Europeans. In 1735 Carolus Linnaeus published *Systema Naturea* in which he introduced a classification system that organized nature into a hierarchy, now known as Linnaean Taxonomy. Linnaeus classified animals, plants and minerals into a system of nomenclature based on structure and appearance, not on



sentience, cognitive ability or biology (Stearn 1959), the latter being only a nascent science at the time.

While Linnaeus recognized the mind as a distinguishing feature of the human, he struggled with identifying distinct features that would put the human in a kingdom of its own based on body structure, and he explicitly avoided clouding his classification with behaviors or other non-structural attributes (Agamben 2004). He placed humans within the animal kingdom, and in a 1758 revision he locates *Homo* in the category “Primates” (Agamben 2004). According to Linnaeus: “man has no specific identity other than the ability to recognize himself” (Agamben 2004). Thus, the only distinguishing feature he assigns to humans next to the term *Homo* is the extension: *nosce te ipsum*, later shortened to *sapiens*: “know thyself” (Agamben 2004). This assignment, Agamben notes, is not a description, but a paradoxical imperative: To be human, a human must recognize that it is not non-human (Agamben 2004). Importantly, this quality of self-awareness was not ascribed to other animals, thus there was an assumption, for example, that a fox could not know it is a fox or have a concept of itself in relation to its environment.<sup>157</sup>

Though Linnaeus had difficulty determining where to bound the human in the animal kingdom, he abandoned his structure-only classification constraint when it came to subcategories, a decisive step in that set the course for racism. Linnaeus sub-categorized the human race into four distinct categories based on his perceptions of

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<sup>157</sup> Even Descartes essentially admitted we cannot know the what the fox thinks. In a letter to Henry More, Descartes concedes: “we cannot prove that there is any thought in animals, [and] I do not think that it can be proved there is none, since the human mind does not reach into their hearts”, also, “we cannot all prove the existence of a thinking soul [*animam cogitantem*] in animals.” Steiner, G. 2005. *Anthropocentrism and Its Discontents: The Moral Status of Animals in the History of Western Philosophy*. Pittsburgh, PA: University of Pittsburgh Press. (142).

Europeans, Asians, Native Americans and Africans within the context of 18th century European culture. He described the civilized “Europaeus” as white, serious, strong, smart, inventive and ruled by law. In contrast, he described yellow Asians as greedy, severe and ruled by opinion, red Americans as ill-tempered, obstinate, free and ruled by custom, and black Africans as lazy, slow, foolish and ruled by caprice (Marks 1995). Linnaeus’ human divides were leveraged in the 19th and 20th centuries by those who argued that white Europeans were more evolved than other peoples of the world (Muller-Wile 2014).<sup>158</sup>

Advances in science have shown that the organization of life is far from simple, and the mapping of the human genome has not only confirmed our genetic similarity to other animals, but has lead evolutionary developmental biologists to speculate that life is not organized as much by genetic makeup as it is by its processes (Mitchell 2009).<sup>159</sup> Linnaeus created his system of classification before Charles Darwin was born. Had he been aware of the discoveries to come in the fields of evolution and complexity science his classification schema would likely have looked more like a social network diagram than a flow chart. DNA analysis indicates there is no hard genetic divide between humans and all other animals (Spencer 2005), yet while Linnaean taxonomies have been reorganized numerous times to accommodate new discoveries, this cornerstone of

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<sup>158</sup> Linnaeus’ *System Naturae* (1735) also had a classification for *Paradoxa* (monsters) in which he gave a brief description of hydras, dragons, and the like, followed by his rationale for why they don’t actual exist or why they are in fact not monsters. For example, he suggested a satyr was in fact a monkey. Linnaeus, C. 1964 org. 1735. *Systema Naturae*. Nieuwkoop: B. De Graaff.

<sup>159</sup> Genetically, humans are nearly 99% identical to bonobos and chimpanzees, or 96% identical if accounting for DNA insertions and deletions. Spencer, G. 2005. New genome comparison finds chimps, humans very similar at DNA level. In *NIH News*. National Institutes of Health: National Institutes of Health, U. S. Department of Health and Human Services.

biological science still organizes animals into mutually exclusive categories, rather than on a spectrum of overlapping territories.

There is obvious utility in classification, but Linnaean classification has given rise to racism and speciesism by enforcing arbitrary boundaries around species. These boundaries reinforce the idea that each species has a specific place, bodily detached from the environment, which is problematic in conservation because institutions and management are defined by taxonomic designations. For example, a major contention in Mexican wolf and red wolf recoveries has been their designations as distinct subspecies (Chambers et al. 2012), and for Mexican wolves the question of purity against allegations of crossbreeding with wild dogs.

The notion of the human as necessarily privileged for its difference ensures the human place at the top of the natural hierarchy and this hierarchy is rhetorically used to legitimize exploitation of animals, natural resources and other human beings.<sup>160</sup> Non-human animals continue to be used as referents to racialize, dehumanize, and maintain social power divides (Elder et al. 1998). For example, the word “animal” is rhetorically utilized as a referent for when humans are not treated like they should be (treated like an animal), to describe unruly or violent humans (acting like an animal), or to dehumanize people (they are animals). Awareness that humans *are* categorically animals has virtually vanished.

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<sup>160</sup> Even approaches that attempt to give depth to the non-human, still lump non-humans together separate from the human. Heidegger, for example recognized the worldliness of [non-human] animals, but still assessed them together as being “poor in the world”, due to their limited being. Buchanan, B. 2008. *Onto-Ethologies: The Animal Environments of Uexküll, Heidegger, Merleau-Ponty, and Deleuze*. Albany: State University of New York.

As with most philosophies, Descartes' assertions were not universally in sync with those of other philosophers. Similar views on non-human animals were contested before him by Michel de Montaigne (1533-1592) (Melehy 2005), by his contemporary, Henry More (1614-1687), and by his successor, Norman Kemp Smith (1872-1958) (Steiner 2005).<sup>161</sup> Descartes' ideas about animals and nature have also been heavily critiqued by contemporary scholars. Some contemporary philosophers and historians defend Descartes, arguing that his position on animals has been misunderstood. To this, Gary Steiner amusingly quips: "How could such complete disagreement arise over the views of a philosopher known to have placed a great premium on clarity? (Steiner 2005, 134)".

The science of his own method has proved Descartes wrong about many things. Yet while considered an anomaly in the history of Western thought (Scofield 2004), Descartes' ideas have had a tremendous and sustained influence on intellectual, scientific, industrial, and technological pursuits in the modern world and are deeply embedded in hierarchical social systems. Will Wright (1992) posits that the foundations of science are not dutifully examined because technology, resting on science, has been successful (Wright 1992). Conservation, however, is failing; and this failure is rooted in Cartesian

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<sup>161</sup> Derrida cites Montaigne's *Apology for Raimond Sebond* (1580) as "one of the greatest pre- or anti-Cartesian texts on the animal that exists. Derrida, J. 2008. *The Animal That Therefore I Am*. (L'animal que donc je suis). New York: Fordham University Press." Henry More in a letter to Descartes, blasted his notion of human exceptionalism as "the internecine and cutthroat idea the you advance in the *Method*, which snatches life and sensibility away from all the animals", and Norman Kemp Smith (1872-1958) called Descartes' position on animals "monstrous". Steiner, G. 2005. *Anthropocentrism and Its Discontents: The Moral Status of Animals in the History of Western Philosophy*. Pittsburgh, PA: University of Pittsburgh Press..

fallacy that permeates social consciousness and directs conservation research and interventions.

Eighteenth century science was grounding reality in rational thought and empirical observation that aimed to dispel myth and fantasy and draw distinct boundaries between humans and nature. The narrative of human- non-human animal separation has maintained a system of hierarchies that several hundred years of science, technology and social structure has been built around. Destabilizing this divide is intellectually complicated because a challenge to the divide is a challenge to science on which so much progress rests. It is also potentially threatening for its socially de-stratifying implications. The border between human and non-human animal has arguably been guarded against unifying ideas throughout history that have been viewed as a threat to human dominion and established social hierarchies. The following section examines Cartesian precepts and the constraining effect they have on contemporary conservation science.

### 6.7 Cartesian Fallacy and Conservation Science

Descartes' method of discovery is based on four major precepts: doubt, deconstruct, reconstruct, and be thorough (Descartes 2017 org. 1637), which became the modern scientific method:

- 1.) Doubt everything: Question the authority of existing knowledge, avoid hasty conclusions, eliminate preconceptions, and set aside biases. The principle of objectivity and neutrality of bias in science comes from this precept, as does the scientific tenet that absolute proof is elusive.

2.) Deconstruct: Divide everything into manageable parts and examine those parts separately to gain understanding of the separate parts. The scientific practice of hypothesizing, isolating, and controlling for variables, as well as disciplinary separation of inquiry, and deductive reasoning in science come from this precept.

3.) Reconstruct: Start with the simplest truths first, build on those truths assuming an order, to a more complex understanding of the whole. Making inferences and determining probability are illustrations of Descartes' precept of reconstructing from simple to complex.

4.) Be thorough: Perform exhaustive, comprehensive reviews, with particular attention to potential omissions. The practice of scientific testing and peer review can be tied to this precept.<sup>162</sup>

Fashioned together, Descartes' principles formed a rigorous and reliable method for discovery that has enabled tremendous advances in science and technology. Science has become *the* authoritative and privileged epistemology, and technology has become *the* privileged mechanism for advancement and problem solving (Wright 1992).

However, these principles are based on mutually contingent fallacies that negatively affect conservation science, conservation management, and human behavior *writ large*.

The next section outlines four Cartesian axioms, their logical extensions, their logical fallacy, and the consequences of extending these fallacies in conservation.

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<sup>162</sup> These practices of truth-finding do not belong solely to Descartes (notably, the practice of following a chain of logic to truth dates back to Parmenides in the 5th century BCE) but it was Descartes who formalized these rules into a method of inquiry for the sciences.

### 6.7.1 The Fallacy of Division

*The axiom:* Humans are separate from nature.

*The extension:* Therefore, knowledge of culture and nature can be obtained independently; and humans are not reciprocally impacted by their impact on nature.

*The logical problem:* Descartes' ontology fundamentally separates subjective and objective environments by separating the inner human world of the mind where meaning resides and the outer physical world where matter and substance are located (Ingold 2006a). Tim Ingold (2006) explains that the separation of mind and matter and the subsequent elevation of the human essence based on the argument that culture and meaning are uniquely human, places humans above nature and allows humans to appropriate nature both conceptually and physically (Ingold 2006a).

Ingold argues that splitting the human from nature requires splitting the human into two parts: the organism and the person. These parts then become mutually exclusive, which creates problems. First, if the culture and meaning that make the human distinct lie in the "person", then the organism is in no way distinct from any other animal organism. Second, the development of the "person" as separate from nature, then must be interpreted as a social process. Thus, in order to become a person, one must rise above the animality of the nature-bound organism.

Ingold notes how western thinking is distinctly different when regarding non-human animals, as we do not attribute a process of "becoming" to them. A western viewpoint would assert that animals, having no culture, are born into all that they are, whereas the human infant, though biologically born a human, *becomes* human as it grows

(i.e. a newborn human baby is no more distinguished by its culture or its ability to think rationally than a dog or an ape) (Ingold 2006a).

*The consequences:* The fundamental separation of the subjective and objective automatically establishes an opposition between the biological and social aspects of human beings, engendering the nature-culture divide that is persistently wrestled with, materially and philosophically (Ingold 2006a).

This philosophical separation has led to pursuit of human wellbeing independent of Nature's wellbeing, and a long-standing position that conservation and human development are diametrically opposed. Science and technology have largely been pursued to serve humans but not Nature, except when serving Nature is necessary to secure Nature's service to humans. For example, pest management and commercial interests have driven much scientific research on non-human animals (Trimble and Van Aarde 2010), conservation of charismatic mega fauna is privileged over that of animals considered threats or pests (Stokes 2006; Trimble and Van Aarde 2010), and while Americans overwhelmingly support the concept of conservation, many take a "not in my backyard" stance when it comes to trade-offs.<sup>163</sup> While it can be argued that all human pursuits are inherently anthropocentric, failure to recognize humans as an integral part of Nature contributes to a partially blinded pursuit of science and technology, which compromises natural environments and by extension the future of humanity.

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<sup>163</sup> American support for conservation is supported by a 2015 poll showing 90% of Americans were in support (53% strongly support and 37% somewhat support) of the Endangered Species Act. Tulchin, B., B. Krompak & K. Brunner. 2015. Poll finds overwhelming, broad-based support for the Endangered Species Act among voters nationwide. San Francisco: Tulchin Research.



Divorcing the human from Nature is to deny part of what makes the human fully human. Increasing alienation from Nature removes humans from the experience and mystery of nature. As a result, wilderness has become heavily managed as an otherworld, reduced to a place of aesthetic beauty and a resource to be exploited, while the discovery, wonder and intimate connection with Nature is lost (Shepard 1995). Wilderness alienation leads to a lack of innate knowledge of the wild such that people do not know what the wild is, how to associate with it, how to participate in it, how to appreciate it, or ultimately how to protect it (Balmford and Cowling 2006).

Ecological approaches have steered science toward more holistic framings, but there still exists a tendency to put an intellectual hyphen between the social and the natural. A socio-ecological framework, for example, attempts to account for ecological impacts and dependencies of humans, but it is conceptually flawed because it stems from the *apriori* separation of the human from the environment. Socio-ecological approaches consider the human and the environment as two interactive, separate but linked, human and environment domains. This false binary positions research to pursue knowledge of human-environment systems as coupled rather than as a singular system. Essentially, the goal of connecting human and natural systems presumes they are not together and attempts a back-door merge of two constructs that were erroneously separated at their foundations. Ultimately, this perpetuates a binary that falsely privileges the human position in the meshwork of life and leads to unrealistic divvying up of nature. The need for a human shift toward connection to and recognition of dependency on the nature, has been widely recognized by scientists and theologians (White 1967; Leopold 1970 org. 1949; Merchant 1989; Wright 1992;

Shepard 1995; Wilson 1996; Balmford and Cowling 2006; Paterson 2006; Bekoff 2010; Francis 2015). Manfredo et al. (2016) posit this shift cannot occur without a fundamental shift away from the idea that humans are separate from nature. We cannot at the same time be *a part* of nature and be *apart* from nature.

### 6.7.2 The Fallacy of Human Exceptionalism

*The axiom:* Humans are the only rational, sentient, and soul-bearing beings.

*The extension:* Therefore, non-human animals do not make rational decisions, have social systems, language, or morality, and thus can be managed and/or exploited by the rational human.

*The logical problem:* The crux of Descartes' argument for separation of the human from other animals is that other animals are non-responsive. There is general scientific agreement that non-human animals *are* responsive. Non-human animals have social structures, language or complex communication systems, generational information transfer, advanced problem-solving abilities, emotions, and some form of morality, making them everything but mechanical. They utilize symbolic language (Marable and Collins 2018), maintain different kinds of social systems (Packard 2003; Beespotter 2018), possess and express emotion including affection, jealousy, contempt, terror, loneliness, and grief (Moussaieff Masson and McCarthy 1995; Bekoff 2009; Brooks Pribac 2013), and demonstrate rational thought in both individual and social situations involving problem solving, conflict resolution, cooperation, predator avoidance and securing of resources (Andrews 2016).

*The consequences:* The pretense that only humans have minds has positioned humans as privileged on the material plane and grants the faculties of meaning-making, discovery and knowledge creation solely to humans. This has bestowed humans a powerful authority over other animals and has allowed humans to exploit and manage other animals against a very low ethical standard.

Despite broad acknowledgement this foundational Cartesian error, the assumption that non-human animals have no self-awareness remains prevalent in conservation science. Wildlife conservation is largely conducted at a species level and pays little attention to the individual animal unless it is a “problem” or captive animal, or an animal that exercises a particularly romantic form of individual agency. Denial of the individual is not only ethically compromising, but it presents problems in conservation because it reduces the complexity of non-human animal being and can result in oversimplified conservation solutions that don’t account for the needs and behaviors of individual animals. For example, roundups, trapping, translocation, and collaring of animals disrupts the individual and collective stability of wild animals. Wild animals often survive and rebound from these kinds of stresses, but resilience to human-imposed stress should not determine the normative ethic in conservation.

### 6.7.3 The Fallacy of Objectivity

*The axiom:* Humans can be objective and possess clear and true perceptions of the world.

*The extension:* Therefore, scientists can observe phenomena from a neutral position, independent of the phenomena without affecting the phenomena being studied.

*The logical problem:* In attaching the faculty of reason to the mind and using reason as a marker to define the separation between humans and other animals, Descartes denied non-human animals sentience, emotion, and self-awareness. This distinction also separated the faculties of reason and passion (or instinct) in humans and privileged reason, such that demonstrations of human passion or impulsivity became an indication of animal, base, or uncivilized being in humans.

The premise of objectivity alienates scientists from the phenomena they study, and can therefore limit access to, and understanding of phenomena. Perception is highly subjective and thus is neither clear nor singularly true. Failure to recognize subjectivity of perception erroneously assumes scientists can be positioned objectively outside of the phenomena being studied when they are actually positioned within Nature and within superficially isolated environments as situated knowers (Fox Keller 1985; Wright 1992).

*The consequences:* Emotion and subjectivity have been largely discouraged in science (Fox Keller 1985). Evelyn Fox Keller asserts that deeply-rooted ideas about rationality divide intellect and emotion; reserving objectivity, reason, and mind as male attributes, while assigning subjectivity, feeling, and nature as female attributes. She argues this organization has relegated the domain of the personal to women and the domain of science to men, and that as a result most scientific knowledge has been produced by a limited human subset of white, middle-class men, that refuses the deeply personal and social aspects of science that engender cognitive pursuit of knowledge (Fox Keller 1985). Though dependent links between emotion and intellectual function have been made (Damasio 1994), the notion that science can be objective or unbiased still has strong currency. Science was and is subject to influences of power including funding,

social positioning and social agenda that heavily guide what inquiries are conducted, what studies get funded and what research results get published. While bias is highly policed in contemporary science, science is never fully neutral.

Uexküll mused that the worlds of creatures like the tick and the sea urchin were beyond human understanding because they were so functionally united with the greater environment that that an anthropocentric person was incapable of knowing them. Humans, by their very nature of being human, are limited in their potential to understand other animals (Agamben 2004; Uexküll 2010 org. 1934). The self-imposed constraints of scientific method limit the ability of science to discover beyond what is empirically observable and testable. A scientist can discover only the observable “outside” of an animal while the “inner world” of an animal and its vital extensions remain elusive. An understanding of an animal’s physical constitution or behavior falls short of understanding the totality of what an animal *is* because the animal is not entirely housed in the body. Conservation science must push beyond studying wild animals as objects navigating a human world and acknowledge them as subjects with purpose and agency that are actively engaged in their constantly changing, interactive worlds, and science must acknowledge the limitations of human perceptual worlds.

#### 6.7.4 The Fallacy of Fixedness

*The axiom:* Vitality is housed in bodies and not extended to the environment

*The extension:* Therefore, scientists can understand bodies in the natural world (i.e. people, non-human animals, and plants) by isolating them from their environments and studying them independent of their environments.

*The logical problem:* Vital forces are free-flowing and consistently circulating, rather than harbored inside forms such as animal, plant or landscape bodies (Ingold 2000). The supposition of fixedness denies the extension of vitality and dismisses what exists in the process of becoming such as the temporal atmospheric changes, emotion, and intersubjective resonance that manifests in bonds of love and group identities (Ingold 2000).

*The consequences:* While ecological science recognizes vital dependencies, the assumption that vitality is housed within bodies continues to dominate, overlooking important affective relationships between subject and environment.

The idea of gaining knowledge about a subject by isolating and controlling variables generates fragments of knowledge and potentially generates errors, because vital subjects are different in isolation than they are in their environments. The term “wildlife management” is something of an oxymoron given that something that is managed, is by definition no longer wild. The practice of isolation has led to failures in *in situ* conservation. Captive animals can become physically ill, stressed, anxious, manic, compulsive, and fail to mate or care for their young. Controlled environments, confinement to small areas, human presence, disruption in circadian cycles, inability to migrate, and many other factors prevent captive animals from thriving (McPhee and Carlstead 2010).

Isolation overlooks the study of relationships and processes *between* parts. Jakob von Uexküll (1864-1944), theorized that environments are essentially extensions of bodies. He theorized that different animals have different subjective perceptual worlds, or *umwelten*, and that each individual organism actively creates its own *umwelt* and is

constantly becoming in relationship to its changing environment (Uexküll 2010 org. 1934). Uexküll contended an animal is never isolated and therefore can never be understood outside of the context of its surrounding environment, and must always be defined in relation to its purpose and its ability to interact with its environment (Weiss 1948; Rütting 2004).

The assumption of fixedness leads to a “shampoo, rinse and repeat” approach to science that denies that the world is in a constant state of becoming and that subtle change can have significant effect. These effects are not always immediately (and perhaps never) empirically observable. The idea of fixedness leads to the idea that science is a controlled process, that scientific results are truths, that science should be *the* trusted authority, and that the technological fix, *the* “go-to” solution.

However, for all its potential, privileging science limits human understanding of nature because much of nature cannot be observed, is subjectively experienced, and is always changing; rendering repeat empirical testing under same conditions impossible. From this legacy stems a significant problem with contemporary understanding of conservation and sustainability science, wherein the principal of uncertainty is misunderstood or outright rejected, because of the longstanding narrative of nature as static, predictable and controllable.<sup>164</sup> Finally, The idea of fixedness has led to the fragmentation of knowledge into disciplines, resulting in disconnection of knowledge.

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<sup>164</sup> Scientists have pushed back on this disconnection significantly in the last twenty-five years, as the complexity of inquiry necessitates conceptualization of degrees of truth (degrees of likelihood or certainty) as opposed to absolutes.

## 6.8 [Re]Animation of Nature

Ingold addresses epistemological problems of science by proposing an alternative ontology. He proposes that we reconnect the human to Nature by way of re-animating our thought. Ingold argues that science should attempt to dissolve the problematic subject-object dualism and seek to understand life as animic, such that while vitality may occupy a body, a place or a time, it is not statically *located*.

“It is of the essence of life that it does not begin here or end there, or connect a point of origin with a final destination, but rather that it keeps on going, finding a way through the myriad of things that form, persist and break up in its currents. Life, in short, is a movement of opening, not of closure (Ingold 2011)”.

He asserts that things in the world are not separate and related, that “Things *are* their relations (Ingold 2011, 70)”, and argues that science will benefit from “re-animating” Nature via recognizing life as unbound, unharnessed and continually becoming, and that this turn to an animic ontology will mend the nature-culture divide.<sup>165</sup>

The natural landscape is a vibrant living entity that affects and is affected by the subject that gazes upon it, walks within it, brings things to it or extracts things from it. Landscapes exists *apriori* but also comes into being as we create it. Brian Cosgrove argues that people have an imagined relationship with nature and that landscape is a medium through which they express their social roles and the social roles of others

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<sup>165</sup> Animic ontologies differ from totemic ontologies. Totemic ontologies conceptualize life force coming from land or animal forms that exist independently, whereas animic ontologies view bodies as permeable and vitality as fluid moving through them thereby conceptualizing the world in a state of becoming and continuous birth. Ingold, T. 2006. Rethinking the animate, Re-animating thought. *Ethnos Journal of Anthropology*, 71, 9-20.



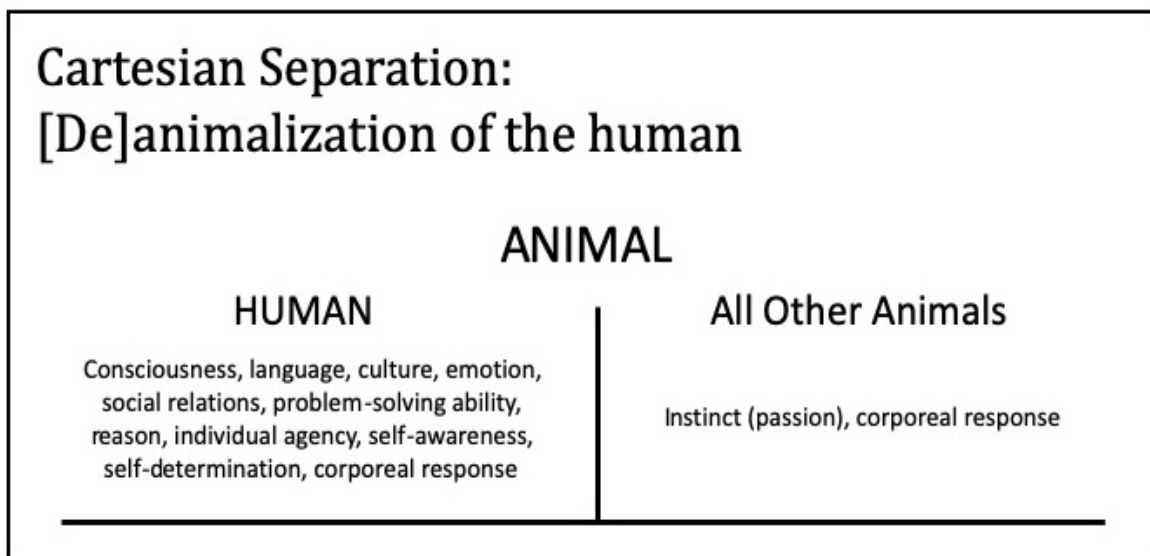
(Cosgrove 1984). He suggests that when we objectify landscape it allows a sense of control over the natural world, but when we choose to see ourselves as part of the landscape, landscape becomes a “dimension of existence” and our sense of control is gone because we cannot walk away from the landscape as we might walk away from a painting (Cosgrove 1984). Ingold asserts the landscape itself is a living entity not separate but interwoven with other life, entangled with the open sky (Ingold 2008) and with those who dwell and have dwelled there (Ingold 1993; Ingold 2011).

Paul Dickson argues that “being” is shared between humanity and nature, and that locating a sublime sense of being reintegrates the human into the natural world, such that connectedness is replaced by a feeling of sameness. He describes sublime being as state of greatness in which there is a conscious sense of universal oneness. He argues that the concept of being, while essentially metaphysical historically, can be validated phenomenologically in common experience, particularly in the beholding of a clear blue sky (Dickson 1997). The clear blue sky has no boundaries and eludes the perceptions of closure, instilling a sense of totality that is without qualities or relations, and thus egoless (Dickson 1997). Dickson argues that as we individualize ourselves we lose our sense of being, and that while ego-freedom must exist, that nature must never be subservient to it (Dickson 1997). Accordingly, the American ideal of individualism can be construed as a fundamental conservation impediment.

## 6.9 [Re]Animalizing the Human

Taxonomically, an animal (an organism in the kingdom *Animalia*) is typically defined as having a multicellular body, specialized sense organs, voluntary movement,

dependency on another organism for sustenance, and ability to acquire and digest food. There are some other criteria, but essentially animals are considered anything that is not plant, fungus, protist or monera. While the human is placed taxonomically in the kingdom *Animalia*, in practice an animal is considered any being that meets the above criteria *except* a human being. The human is privileged as the exceptional animal, defined by the unique possession of qualities such as language, reason, and emotion (*Figure 6.3*).

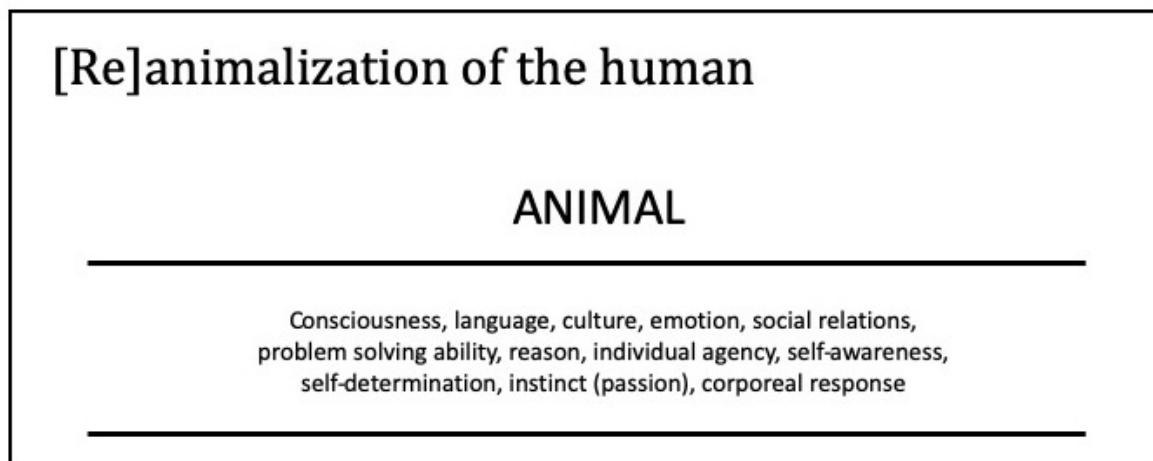


*Figure 6.3.* When the artificial divide between human and non-human animals is conceptually enforced, non-human animals are denied attributes that evidence now supports they have. Additionally, humans are denied the instinct of animals.

Based on the presumption that most of the qualities in Figure 6.3 are uniquely human, attempts to ascribe these qualities to non-human animals have been flagged as anthropomorphism and historically criminalized in science (Moussaieff Masson and

McCarthy 1995; Bekoff 2009).<sup>166</sup> However, science has empirically demonstrated these capacities exist to varying degrees in non-human animals.

Arguments for the ethical treatment of non-human animals are frequently couched in terms of humanizing non-human animals by recognizing that they possess human capacities. This attempt seeks to establish a moral obligation to treat animals humanely. However, humanizing animals actually enforces the conceptual divide between humans and non-human animals and poses the risk of denying animality to the non-human. This positions us to end up with a conceptual “monkey in a diaper”. What needs to occur is a conceptual re-animalization of the human in which the human is more properly located amongst other animals and not in a privileged placed apart from them (*Figure 6.4*).



*Figure 6.4.* By removing the conceptual divide between human and non-human animals, humans gain instinct, and non-human animals gain the attributes previously reserved for the human.

Through re-animalizing the human, several problematic issues in science and society are addressed. *First*, the problem of anthropomorphism is put to rest.

Anthropomorphism is only possible if the qualities being ascribed are presumed to be

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<sup>166</sup> It has been and remains acceptable to anthropomorphize in literature such as folk tales, fables and novels, and the preponderance of anthropomorphism in fictitious literature is perhaps an indication of social rejection of the human privilege.

uniquely human. Accepting these qualities at the broader tier of *animalia* eliminates the fallacy of ascription of human qualities.<sup>167</sup>

*Second*, it allows for scientific recognition of multiple spectrums of difference and similarity between species and between individuals of particular species. Not all animals possess all qualities in the same capacity in terms of degree or temporal possession, and these qualities do not all manifest in the same ways.<sup>168</sup> This is understood within the human spectrum. For example, it is accepted that not all humans have equivalent intelligence. Recognition of spectrums allows for consideration of qualities independently and avoids the error of assessing animal qualities such as language or intelligence against human capacities. In wildlife management, recognition of a spectrum of difference between and within species allows for greater investigation into the bio-social complexities of conservation.

*Third*, it allows for understanding of both human and non-human animals as thinking and emotionally-driven beings. Recognition of non-human animals as conscious and emotional beings presents a broader landscape for understanding complex wildlife conservation problems. It provides opportunity to view wild animals as intentional actors and not simply reactionary to their environment. For example, animals move in response

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<sup>167</sup> Re-animalizing the human at least eliminates the problem of anthropomorphism of animals. Anthropomorphism is also done with plants and objects considered inanimate. It can be argued that the housing of some qualities to *Animalia* imposes restrictions on qualities that are perhaps shared by organisms in other kingdoms. The argument to unbind these qualities could be extended as the very category of *Animalia* can be legitimately contested because it presupposed the authority of a human ordering of Nature. However, I limit my argument to returning the human to a place amongst, rather than above other animals, and leave the domains of other kingdoms unexplored.

<sup>168</sup> By temporal possession I am referring to the potential for a non-human animal to have cognitive abilities that fluctuate due to internal or environmental factors similarly to the way a human might not be “thinking straight” due to emotional or other kinds of stress.

to many factors including predator-prey dynamics, shelter and sustenance needs, breeding, social dynamics, historical knowledge, problem solving, and individual determination for reasons that may be biologically, emotionally or cognitively driven. Recognition of rational thinking in non-human animals allows for broader investigation of the individual and social agency of non-human animals; a significant factor in wildlife conservation.

*Fourth*, repositioning the human allows understanding of humans as reactionary and subjectively influential as opposed to beings that can rationally override subjective and emotional responses. Human responses to wildlife and wildlife management are often deeply personal and emotionally or spiritually laden, and as Damasio has demonstrated, emotions are an integral part of the rational thinking process (Damasio 1994).<sup>169</sup>

*Finally*, by re-animalizing the human, we remove the structure that has enabled dehumanization of particular humans or groups of humans by way of making them into animals (Singer 1975; Wolfe 2003; Agamben 2004). Agamben suggests that humankind is the result of divisions and separations, that we are defined by these distinctions, and that we have suspended our animality. He notes that the important work on human rights and values depends on dissolving the division between human and human, which begins with dissolving the division between human and animal. Agamben states that Western politics *is* biopolitics, and the governing political conflict is between the animality and humanity of human beings (Agamben 2004).

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<sup>169</sup> Neuroscientist Antonio Damasio contends that emotions and feelings are embedded in the process of reason. Thus reason is not emotion free and may actually be contingent on emotion Damasio, A. 1994. *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Grosset/Putnam..

## 6.10 Ethical Implications

Re-animalizing the human does not forfeit attributes or make the human less human. Rather, it expands the capacity of the human because humans regain instinct. This does not deny human rationality, but it broadens the concept of rationality, such that human attitudes and behaviors can be considered in terms of innate responses to environmental stimuli. In re-animalizing the human, non-human animals conceptually regain the qualities formerly beyond the fray of animality, which allows for legitimate consideration of inter and intraspecies sociality, psychological states, emotions, rationality and individual and social agency within and beyond the realm of particular species.

The non-human is routinely entangled with human social life (Whatmore 2002). These entanglements can manifest in institutions, politics and economics. They can also materialize as conservation problems contextualized as wildlife behavior problems, such as livestock depredation and rogue animal movement, and as those contextualized as human behavior problems such as wildlife poaching, retaliatory wildlife killing or fear-based intolerance for co-existence. Conservation would benefit from the fundamental re-animation and re-animalization, as this enables deeper understanding of human and non-human animal entanglements in shared landscapes.

Evidence has overturned Descartes' mechanized view of non-human animals, and it is now widely accepted by the scientific community that non-human animals are far more than passionate automatons, and the conceptual gap between human and non-human animals has been strongly challenged philosophically (Singer 1975; Midgley 1983; Agamben 2004; Derrida 2008). In the domain of science, ethologists, animal and

relational geographers have boldly pushed to close this gap (Ingold 1988; Wolch and Emel 1998; Philo and Wilbert 2000; Bekoff and Goodall 2002; Whatmore 2002; de Waal and Pokorny 2005; Paterson 2006; Bolla and Hovorka 2012; Urbanik 2012; Hovorka 2017). Even the master of divides, the Catholic Church, now advocates for an ecological conversion that embraces a holistic and comprehensive approach to sustainability problems and resists blind confidence in the technological fix (Francis 2015).<sup>170</sup> In stark contrast to the Catholic Church's historical leveraging of the separation of the human from nature, Pope Francis now argues: "Nature cannot be regarded as something separate from ourselves or as a mere setting in which we live. We are part of nature, included in it and thus in constant interaction with it (Francis 2015, 104)."

Despite intellectual shifts, human privilege continues to be guarded in many domains of science, including conservation biology, because putting the human in its right place within and not above other animals presents the massive task of re-evaluating the ethics of livestock raising, scientific testing on animals, keeping of captive animals (for research, conservation or entertainment), and any other human enterprise that leverages human exceptionalism (Philo and Wilbert 2000; Bekoff 2009). Re-animalizing the human is threatening to many status quo scientific and technological pursuits that support (and are funded by) industries such as military, pharmaceutical, cosmetic, livestock, tourism, and entertainment. Wildlife conservation is arguably less threatened by the re-animalizing of the human, but wildlife management and conservation research

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<sup>170</sup> The Catholic Church has put forward this position for the last several decades Francis, P. 2015. *Laudato Si': On care of our common home*. Vatican City, Rome: Vatican Press.

would likewise have to re-examine ethics of practices such as rounding up, culling, relocation, cross-fostering, trapping, collaring, and captive breeding.



## CHAPTER SEVEN

### APPROACH AND METHODS

#### 7.1 Overview

Conservation action has historically been guided primarily by conservation science, which is traditionally conceptualized as a natural science, and thus guided by an empirical epistemological orientation (Bennett et al. 2017, 152).<sup>171</sup> Michael Soulé (1985) distinguished the discipline of conservation biology in his seminal essay, “What is Conservation Biology?”, as a crisis-driven scientific discipline that “addresses the biology of species, communities, and ecosystems that are perturbed, either directly or indirectly by human activities or other agents (Soulé 1985, 727)”. Soulé emphasized that biological sciences are dependent on social science data and analyses to address the increasing human development pressures on the natural world (such as habitat encroachment, habitat fragmentation, and the impacts of resource extraction and pollution) as well the reverberant impacts of environmental destruction and degradation on society (Soulé 1985). Soulé’s summation of conservation biology as an anthropogenically crisis-driven discipline sparked broader research on the human dimensions of conservation (Bennett et al. 2017).<sup>172</sup>

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<sup>171</sup> While many early conservationists acknowledged the need to integrate human factors into conservation, conservation science was driven by natural sciences such as biology and ecology with little attention to human social factors until the mid-1980s.

<sup>172</sup> Soulé’s essay was critiqued in 2012 by Peter Kareiva (then Chief Scientist of the Nature Conservancy) and Michelle Marvier who called for explicit inclusion of human well-being in the conservation agenda under an umbrella discipline: Conservation Science. Kareiva, P. & M. Marvier. 2012. What is conservation science? *BioScience*, 62, 962-969. This sparked a (still contentious) global debate over the core values and ethics of conservation.

It is now widely acknowledged that conservation efficacy relies on attention to the human dimensions of conservation and environmental management, not only to better understand and address the human factors contributing to the conservation crisis and the effects of conservation on communities, but to facilitate conservation support and engagement by diverse stakeholders (Endter-Wada et al. 1998; Bennett et al. 2017).

## 7.2 Community Based Conservation

Beginning in the 1980s, a shift toward community-based conservation (CBC) began. CBC is a form of applied conservation that seeks to reverse traditional top-down conservation approaches so that conservation is driven those (typically local to the conservation effort) who bear direct costs of conservation (Western, Wright and Strum 1994). The logic behind CBC is that conservation crises are heavily influenced by the needs of local communities, and therefore, conservation success depends on local engagement. Engagement is facilitated by devolving control over natural resources, providing local communities with benefits and links to markets, and decreasing negative impacts of conservation on local communities by reducing power and resource disparities between those who control conservation interventions and those who are directly impacted (either positively or negatively) by them (Western et al. 1994).<sup>173</sup>

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<sup>173</sup> CBC increased in the mid-1980s in response to widespread global conservation interventions. Establishment of global protected areas had markedly increased by 1970 and peaked between 1985 and 1995. By 1985 the impact of conservation on indigenous cultures and local economies had become a significant issue with problems emerging in global protected areas (primarily in the developing world) associated with human rights infractions, the influence of poverty on conservation, and the high cost of management prompted. Soulé, M. 1985. What is conservation biology? *Ibid.* 35, 727-734, West, P., J. Igoe & D. Brockington. 2006. Parks and peoples: The social impact of protected areas. *Annual Review of Anthropology*, 35, 251-277. Western, D., M. R. Wright & S. C. Strum. 1994. *Natural Connections: Perspectives in Community-Based Conservation*. Washington, DC: Island Press.

Waylen et al. conducted a systematic review (of 68 case studies) of the importance of local cultural context for the attitudinal, behavioral, ecological and economic outcomes of conservation interventions (Waylen et al. 2010). They found that cultural context significantly influences the outcome of conservation interventions; that conservation interventions that are sensitive and responsive to location institutions and culture are more successful than those that ignore traditional values and beliefs; and that greater community participation is (more limited and to varying degrees across case studies) associated with conservation intervention success through influencing desired attitudinal conservation outcomes (Waylen et al. 2010). Interestingly, the review did *not* find that community participation influences desired behavioral and economic outcomes (Waylen et al. 2010). While they found interventions that allowed community use of natural resources generally performed better than those that did not, they found delivery of practical or equitable benefits to communities and links to markets were *not* a predictor of success (Waylen et al. 2010). Waylen et al. conclude that attention to community understanding and adjustment is paramount to conservation success, that conservation must be viewed as a social and political process, and that conservation practitioners must integrate social science into conservation interventions (Waylen et al. 2010).

As most community-based conservation has occurred in the developing world, there is limited literature confirming the efficacy of community-based outcomes in developed countries such as the U.S., where governance is comparatively more stable and the most directly affected populations are (typically) comparatively less compromised by conservation interventions. That is, conservation interventions in developed countries

often compromise stakeholder profitability or lifestyles, but do not compromise human rights or basic human needs.

A study of 159 CBC case studies (all in developing countries) found that contrary to popular assumption, national social economic context (economy and stability, transparency and accountability of governing institutions) did not play a significant role in conservation success (Brooks, Waylen and Borgerhoff Mulder 2012). This indicates that important aspects of CBC such as attention to community understanding and adjustment (Waylen et al. 2010) could still yield positive results for conservation regardless of the economic and political stability of a region. In other words, there is an indication that CBC could work in developed countries. One relevant example of CBC in the U.S. Southwest is a collaboration organized in the 1990s by a group of ranchers known as the Malpai Borderlands Group (Malpai), collectively concerned with the sustainability of approximately one million acres in southeastern Arizona and southwestern New Mexico (Curtin 2002).

As discussed in Chapter Two, ranching in the Southwest has historically devastated landscapes through unsustainable grazing and resource management practices, and this devastation in turn crippled the ranching industry and the livelihoods of ranchers. Flood and drought have historically impacted as much as 40 percent of the Southwest (Merideth et al. 1997; Sheridan 2001), and since the mid 1990s climate change concerns have been rising in the Southwest as the frequency of extreme weather and climate events increased.

Ranching is particularly vulnerable to drought as it is dependent on soil moisture and rainfall timing. In the mid-1990s ranchers were facing drought and dry wells combined with high feed prices and low stock prices, which pushed some smaller ranches

(50 head or less) out of business (Merideth et al. 1997). Many agricultural lands were being converted into urban developments to support dramatic population growth occurring in the southwest (Merideth et al. 1997). Intense differences in values and political conflicts were rising in the region over land and water use, land ownership and control, resource use versus resource protection, and urban versus rural livelihoods (Merideth et al. 1997).

Input from conservation organizations and scientists gave the Malpai greater knowledge of ecological systems and emphasized how protecting natural systemic processes such as fire and herbivory (animals feeding on plants), supported resource protection (Curtin 2002). Conversely, scientists have engaged the Malpai in ongoing inventory, monitoring, and restoration efforts, and the Malpai have provided valuable data to scientists and conservation organizations (Curtin 2002). The collaboration has increased the level of understanding between conservation organizations, scientists, and local stakeholders, improved the applicability of scientific research, and has positively affected the long term sustainability of the region (Curtin 2002).

Though the Mexican wolf recovery not fit the traditional CBC framework, it is a localized intervention that attempts to employ some of the principles and practices of CBC. However, the successful Malpai example of CBC in the developed world is distinguished by its equitable distribution of knowledge and power, which is not present in Mexican wolf recovery.

### 7.3 Towards a More-Than-Human Conservation

In an effort to learn from conservation failures and to increase the transferability of conservation successes, conservation science is becoming more self-reflective, incorporating increased monitoring and evaluation of conservation management, governance, and ecological and social factors (Bennett 2016).<sup>174</sup> Human dimensions research is now extensive and includes diverse fields of classic, applied, and interdisciplinary sciences (Bennett et al. 2017) (Figure 7.1). Bennett argues however, that preference in interdisciplinary conservation is given to particular types of knowledge, methods and information (such as quantitative, objective methods used in economics), and linked to the privilege of positivistic Western science, which he argues insufficiently addresses complex contextual factors that influence conservation outcomes (Bennett 2016).<sup>175</sup>

Intersections between human and non-human animals and environment are not points where distinct domains with defined boundaries come together. Rather, they are liminal spaces that are constantly becoming within broader changing heterogeneous social, geographic, and biological landscapes, engendering interaction that is both

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<sup>174</sup> Bennett highlights that while evidence-based conservation can improve conservation science knowledge, it can also compromise particular conservation successes because the capacity and longitudinal time needs for evidence-based conservation can hinder meaningful conservation action Bennett, N. 2016. Using perceptions as evidence to improve conservation and environmental management. *Conservation Biology*, 30, 582-292.

<sup>175</sup> Esbjörn-Hargens and Zimmerman posit that with the promise of science, moderns reconceived spiritual ascent as economic, scientific and technological progress on the material plane Esbjörn-Hargens, S. & M. E. Zimmerman. 2009a. *Integral Ecology: Uniting Multiple Perspectives on the Natural World*. Boston: Integral Books.. They argue that validation of the (non-observable) interiors was tossed aside with spiritual ascension, and thus these interiors have since been ignored or undervalued as knowledge sources *ibid.*. These interiors are the psychological and cultural terrains that house the values, worldviews and identities on which conservation success hinges.

sustained and spontaneous. A shift from a focus on nodes of experience, and apt examination of space and processes between nodes (including perceptive, emotional and interpretive space between interactions on the material plane) addresses the relational aspects of human and non-human being and advances the promise of co-existence.

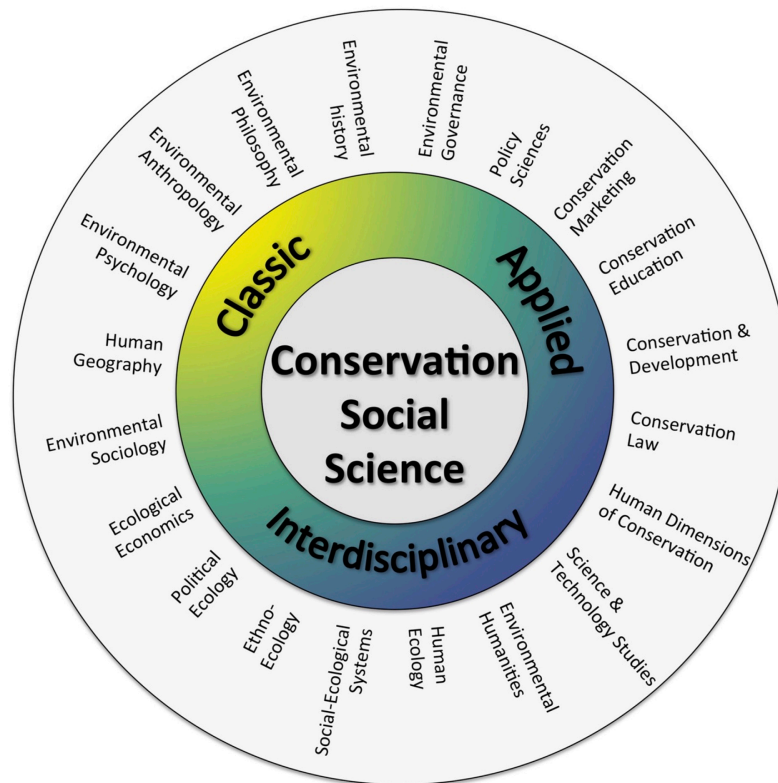


Figure 7.1. The conservation social sciences, arranged by classic, interdisciplinary and applied traditions by Bennett et al. The figure reflects general positioning of these disciplines by tradition, but the authors recognize that designations of traditions are not mutually exclusive and this aspect is illustrated by the gradient inner circle. (Bennett et. al. 2017). There are emerging disciplines and sub-disciplines that address the human dimensions of conservation. Therefore, this figure does not reflect an exhaustive list of approaches to the study of the human dimensions of conservation. For example, Environmental Social Science is notably absent.

This shift is facilitated by leveraging a more-than-human (or post-human) perspective that opposes the notion of the autonomous human, detached from environment. Post-human approaches are not really post, or “after” the human. While they decentralize the human and conceptually remove human privilege, they serve to

actually extend the human by recognizing the human extension into the environment and by accounting for human interiors. Attention to extension and interiority serves to benefit the human in a way that privileging the human has not, and it advances conservation by closing the gap between the human agenda and the agenda for the rest of the world.

While post-humanism is not a rejection of the category of the human (Wolfe 2010), recognizing that humans are animals, a post-human approach facilitates looking at humans and non-human animals together as *animalia* in shared environments. Further extending the concept of the de-bodied human, the *animalia* boundary and other bodily boundaries are disrupted. This de-bodied approach resists conceptual isolation of vitality in forms and recognizes the extension of vital forces from body to environment and vice-versa (Ingold 2006b). This resistance of boundary definition expands the concept of what it means *to be* and complexifies the conceptual landscape of conservation research to capture subjective and intersubjective influences in conservation interventions.

It is particularly appropriate to embrace a more-than-human perspective when addressing problems of wildlife conservation, because as living beings, non-human animals are not objects inhabiting a human world upon a static landscape, they are landscape-dependent actors in a becoming landscape mosaic. Wild animals have intimate relationships with the landscapes they inhabit, and they affect and respond to changes in landscapes and interactions with other animals. They exercise primary agency by actively modifying landscapes and defining territories (Carter and Charles 2013). They can exercise agency by refusing to act (Hribal 2010), and they can exert a kind of passive agency in which their mere presence influences the behavior of other lifeforms, for example, prey animals respond to the presence of predators. Wild animals and humans



have complex reciprocal associations that vacillate from those based on mutual regard and territorial respect to tense affiliations where ambiguous physical and social boundaries are trespassed. Adjusting the species focus in wildlife management to accommodate the determination and agency of individual wild-animals would increase relational understanding of multi-species environments and human-wildlife interaction.

A relational geography perspective asserts that relationships between human, animal and the environment are supra-geographical, existing concurrently on terrestrial, biological, and social planes (Murdoch 2006). The negotiation of space and place in the landscape is relational to other living and non-living things in the landscape. In relational animal geography, the modernist divisions that ontologically privilege the human or separate the human from nature are contested (Ingold 1988; Agamben 2004; Derrida 2008; Wolfe 2013). With a relational approach, conservation would treat the human and non-human as cohabitants and would not situate wildlife or landscapes as objects in, or background to a human world.

#### 7.4 More-Than-Human Methods

Technical and biological aspects of conservation are typically studied empirically utilizing quantitative analyses (Rust et al. 2017). Social aspects of conservation are typically studied through systemic analyses, often utilizing surveys to test *apriori* hypotheses. While surveys, which can be quantified, can provide internal and external validity, credibility, and in some cases transferability, surveys testing *apriori* hypotheses are limited in their ability to contextualize a phenomenon as it is experienced by the respondents (Rust et al. 2017). It is typically not easy for an individual to articulate

beliefs, worldviews, and values, and these concepts have historically been queried through surveys using scales such as the New Ecological Paradigm Scale (Dunlap and Van Liere 2008, org. 1978) or the Wildlife Attitudes and Values Scale (Staples Butler, Shanahan and Decker 2001). While these scales can reveal general perspectives of respondents, they do not reveal the contextual links between these perspectives and the respondents' actual attitude or behaviors toward a specific conservation agenda or intervention.

Qualitative methods such as unstructured or semi-structured interviews and text analysis can provide rich insights based on primary experiences and contextualized viewpoints of respondents, and have been used to extrapolate details of stakeholder perceptions, attitudes and motivations in complex conservation cases (Hughes 2013; Rastogi et al. 2013; Rust et al. 2017; Ghoddousi et al. 2019). Qualitative methods help to minimize researcher assumptions and biases (Rust et al. 2017), and this reduction of bias allows less prominent but potentially influential factors to emerge in analyses. Qualitative analysis can identify key themes, cross-cutting themes, and links between specific factors which can then be used as a basis for additional research based on *apriori* hypotheses.

Aspects of behavior or materiality and aspects of social and environmental systems can be known through empirical observation and systemic analysis respectively. Aspects of individual experience and intention and aspects of culture that cannot be accessed directly (by a researcher) because of their interior and/or subjective nature, can be inferred through statements of belief and opinion (Purdy and Decker 1989). Linguistic analysis of metaphor use and emotive expression can reveal insights to the individual and

collective interiors (Lakoff and Johnson 1980; Lotman 1990; Landau et al. 2011; Baldwin et al. 2017).

#### 7.4.1 Metaphor Analysis

An individual's concept system guides an individual's thoughts, behaviors and experiences. Most individuals are not cognitively aware of their own concept systems, but they are reflected in metaphor use (Lakoff and Johnson 1980). Thus, metaphor analysis can provide insight into an individual's tacit worldview orientations, beliefs and values, attitudes and ideologies (Steger 2007). Analysis of emotion in conjunction with analysis of metaphor can enrich identification of cross-cutting themes, and links between specific factors in qualitative conservation research, and may be especially useful in examining contentious conservation situations in which emotions are elevated.

#### 7.4.2 Emotion Analysis

Classifying emotions and defining their relationships to other emotions is also challenging because emotions defy clear definition, and frameworks for researching emotion often conceptualize emotions as entities (Feldman Barrett 2006). Nevertheless, the significant research on basic emotions and frameworks such as emotion wheels provide a useful foundation for zooming in on emotion, even if it is not possible to pinpoint it. The research in this dissertation defers to Robert Plutchik's (1980) model of eight basic emotions, their intensity range, and primary emotional mixes (Plutchik 1980)

(Figure 6.3).<sup>176</sup> Plutchik also identifies secondary dyads, which are sometimes felt, and tertiary dyads which are seldom felt in contrast to primary dyads which he theorizes are often felt (Plutchik 2001).



Figure 7.2. Robert Plutchik’s Wheel of Emotions (1980) identifies eight basic human emotions: Anticipation, joy, trust, fear, surprise, sadness, disgust, and anger (shown on the central ring). Adjacent to each basic emotion are the polar extremes of those emotions. The area between each emotion stem show the primary emotion dyads (mixes of primary emotions).

<sup>176</sup> This model does not represent every emotional mix or every degree of intensity. Further this model presents emotions as basic or dyadic, versus more complicated mixes of three or more emotions (Appendix 4). There are other emotion wheel frameworks in use with some variance on basic and mixed emotions. Plutchik’s model was selected for this study for its alignment with a particular emotion database.

### 7.4.3 Integral Ecology

As highlighted earlier, researchers and practitioners historically approached conservation issues by addressing technical issues such as the biological needs of a species. More recently, conservation professionals have incorporated research on social structures (i.e. institutions and economics), culture, values, and human behavior. Discipline-specific approaches to conservation issues have provided valuable information from particular perspectives, but understanding the complexity of conservation issues necessitates uniting the insights from, and relationships between these perspectives. Essentially, a meta-framework is needed to extend beyond the limitations of a socio-ecological dichotomy. A framework is needed that acknowledges humans as integral parts of their environments, without privileging the human; that acknowledges the multi-dimensionality of relationships between the human and the more-than-human. As introduced earlier, Integral Ecology (IE) is a value-free framework that provides a way of understanding the relationships between perspectives on the natural world. That is, “a way to understand relationships between *who* is perceiving nature, *how* the perceiver discloses nature (i.e. by what methods, techniques and practices), and *what* is perceived as nature (Esbjörn-Hargens and Zimmerman 2009b, 2)”.

IE recognizes four irreducible perspectives: subjective, intersubjective, objective, and interobjective, corresponding to the terrain of experience, the terrain of culture, the terrain of behavior and the terrain of systems, respectively (Esbjörn-Hargens and Zimmerman 2009b).<sup>177</sup> Aspects of the individual exterior domain are the individual’s

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<sup>177</sup> These four perspectives are considered irreducible because they are not represented by another perspective. Esbjörn-Hargens, S. & M. E. Zimmerman. 2009b. An overview of Integral Ecology: A comprehensive approach to today's complex planetary issues. 1-14. Boulder, CO: Integral Institute.

objective realities that lie in the terrain of behavior and the sensory world (such as information taken in from the five senses, traditional practices, chemical and biological processes, and physical effects). Aspects of the collective exterior are inter-objective, or shared realities that lie in the terrain of systems and the social world (such as knowledge systems, ecological systems and social structures).

The individual and collective exterior domains can be accessed through empirical observation and systemic analysis respectively. The individual interior domain is the phenomenological world, the realm of consciousness and the *umwelt*; Uexküll's self-centered, symbolic world of the individual (Uexküll 2010 org. 1934). Individual interior aspects (such as emotions, self-identity, beliefs and attitudes) are subjective realities that lie in the terrain of experiences and intentions and are known by felt experience. The collective interior is the domain of the cultural world and the semiosphere (Lotman 1990).<sup>178</sup> Collective interior aspects (such as cultural norms, values, ontologies, worldviews and ethics) are the intersubjective or shared realities that lie in the terrain of cultures and can be known by mutual resonance (shared meaning or feeling). Narrative, as demonstrated in Chapter Four, operates as a vehicle for the transfer of influence between the individual interior, the collective interior, the individual exterior, and the collective exterior (Figure 7.3).

IE facilitates a holistic understanding of conservation by emphasizing inclusion of (and deepening understanding of) the individual and collective interiors of stakeholders

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<sup>178</sup> Semiotician Yuri Lotman introduced the concept of the Semiosphere, a conceptual domain in which sign processes (signals that communicate meaning) connect the overlapping *umwelten* in the cultural world. Lotman, Y. M. 1990. *Universe of the Mind: Semiotic Theory of Culture*. Bloomington: Indiana University Press.

(the psychological and cultural aspects of conservation) and identifying how these interiors relate to the exterior phenomena of behavior, material structure, and social structure. An advantage to using IE in wildlife conservation, is that the singular framework can be used cross-species, accounting for the interior and exterior perspectives of non-human animals.

**INTEGRAL ECOLOGY AQAL MODEL**  
(Adapted by author from Esbjörn-Hargens and Zimmerman 2009)

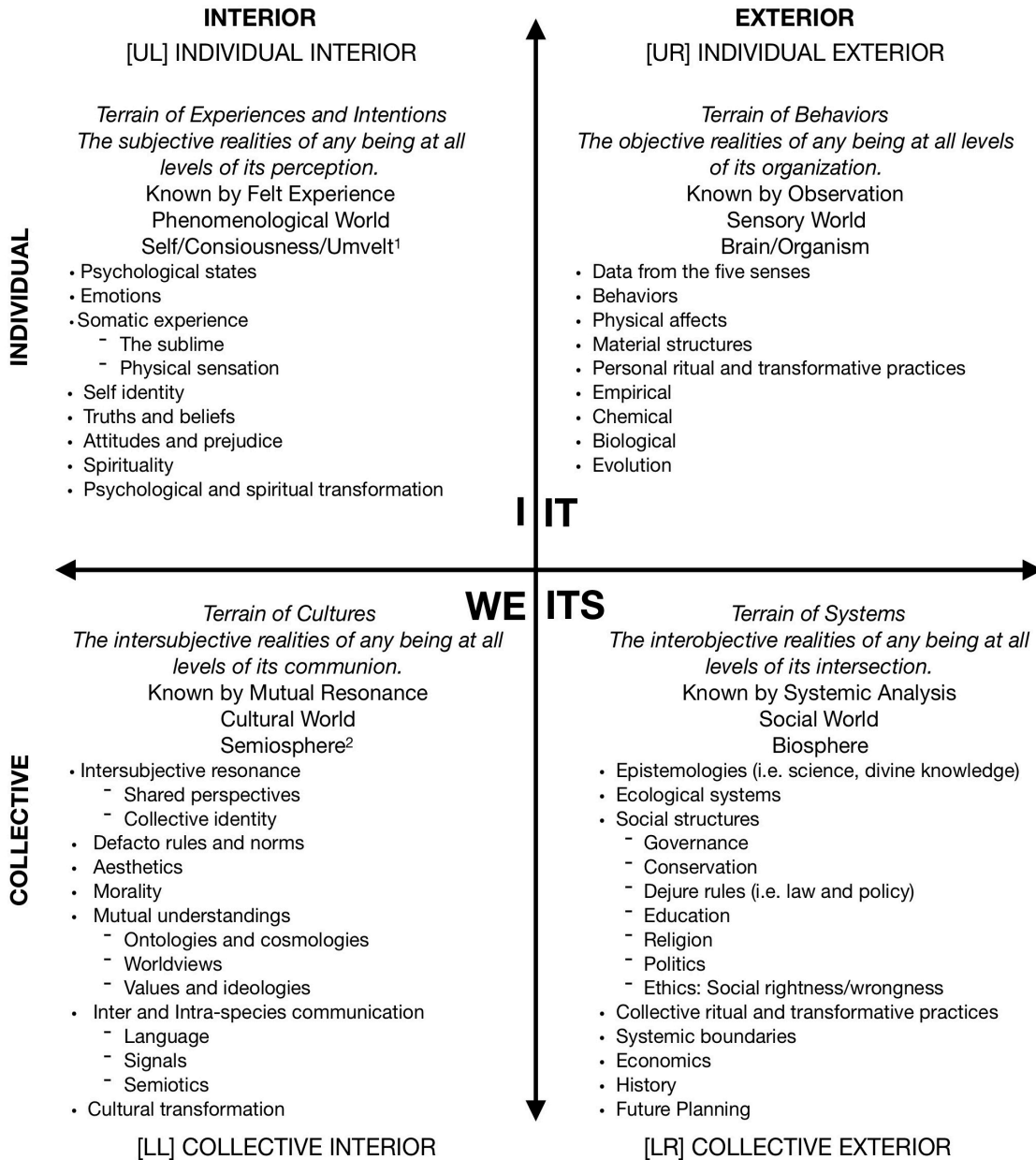


Figure 7.3. AQAL is an acronym meaning: All quadrants, all levels, all lines, all sites, and all types. The model is designed to capture the “intrinsic perspectives that occur at all scales and in all contexts, and the intrinsic features of all individual holons [wholes that are simultaneously parts] (Esbjörn-Hargens and Zimmerman 2009: 50)”. The four quadrants represent four terrains of being and knowing.

<sup>1</sup> *Umwelt* (*umwelten* pl.) proposed by Jakob von Uexküll (1934) is an organism’s perceptive environment, or self-centered world.

<sup>2</sup> *Semiosphere*, proposed by Russian semiologist Yuri Lotman (1984) is the sphere of semiosis in which sign processes operate in the set of interconnected *umwelten*.



#### 7.4.4 Integral Ecology and Non-Human Animals

Ethology has informed conservation, but critical animal studies that address non-human animal perspectives have not been widely embraced in conservation research and practice (Greggor et al. 2014). Conservation interventions typically objectify non-human animals and do not account for animal agency; an omission that I contend hinders conservation success for a number of reasons, including failure to address invasive species, exacerbation of human-wildlife conflict, maladaptation of wildlife, deployment of ineffective or debilitating conservation measures, and compromising of the compassion, humility, and respect for the non-human that make conservation a worthwhile pursuit.

I offer a recent example of how inattention to non-human animal perspectives resulted in a conservation intervention backfire: The world's largest population of double-crested cormorants living on a Columbia River island were eating an estimated twelve million young salmon each year.<sup>179</sup> In an effort to help young salmon make it to the Pacific Ocean, the U.S. Army Corps of Engineers (under authority of U.S. Fish and Wildlife) killed 5,576 cormorants and destroyed 6,181 nests between 2015-2017 (Salinger 2016). Birds were shot out of the air and explosives were set off on the island, provoking action against the agency and overwhelming public disapproval. An estimated 16,000 birds fled the island, and in 2018 a surge of cormorants appeared seven miles

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<sup>179</sup> In addition to being important to river ecosystems, salmon are very culturally significant, and are significant to regional and global economies. However, overharvesting (by humans or other animals) is not the biggest current threat to wild salmon. The greater threats are habitat loss and introduction of domesticated salmon. Rahr, G. 2019. Why protect salmon? <https://www.wildsalmoncenter.org/work/why-protect-salmon/>. (accessed 7 August 2019). Domesticated salmon are also poorly adapted for wild survival, which may contribute to the success of the cormorants along the Columbia River.

upriver. The Oregon Department of Fish and Wildlife anticipates as many as 10,000 nesting pairs will soon nest in the Columbia River Estuary (Brown 2019). In this example, it appears the cormorant population will rebound, but such cavalier action disregards non-human life and is a waste of already limited public conservation funds.

Greggor et al. (2014) contend that cognitive adaptations are as powerful as morphological adaptations as determinants of animal or species success in changing environments (Greggor et al. 2014). Rapid human-induced environmental change presents new evolutionary cues (information used to make behavior and life history decisions) which can compromise species success (Greggor et al. 2014). Sometimes reliable former cues won't be associated with adaptive outcomes because novel cues can pressure biased selection processes resulting in an evolutionary trap; when an organism makes a poor habitat choice based on former cues consistent with quality habitat that no longer exists (Schlaepfer, Runge and Sherman 2002). Accounting for non-human animal perceptions of signs and signals can improve potential for success of conservation interventions.

As a value-free framework, IE is not intended solely as a tool to understand humans in their environments. As members of ecosystems, all sentient beings possess the same four perspectives that humans possess, and thus any animal can take any of these four perspectives with respect to itself, other organisms, or the ecosystem (Esbjörn-Hargens and Zimmerman 2009b). The terrain of experience is the animal's intentional and somatic perspective (the animal's subjective world regardless of conscience relationship), the terrain of behavior is an animal's sensory and response perspective (how the animal registers and interfaces with its environment), the terrain of culture is the

animal's semiotic niche (communication and evolutionary cues shared with other animals of same or other species), and the terrain of systems represents the ecosystem and the roles, patterns and relationships between animals of same and other species (Esbjörn-Hargens and Zimmerman 2009b).

## 7.5 Conclusion

There is much to learn about non-human animal interiors, and humans cannot truly know a non-human mind. Even knowledge of human interiors is elusive as is evidenced by the ongoing debate over human emotions mentioned earlier in this chapter. Most non-human animals cannot linguistically self-report their interiors, but they can communicate vocally and non-verbally.<sup>180</sup> Language is perhaps over-emphasized in interspecies communication research, given that a significant part of human communication is also non-verbal (Argyle and Dean 1965; Mehrabian 1971; LaFrance and Mayo 1978; Ekman and Scherer 1984).<sup>181</sup>

No two species have the same interiors, there is diversity of interiors within species, and variance in how individuals interact with their subjective, contextual and often rapidly changing environments. Despite significant limitations to human understanding of non-human animal individual and collective interiors, it is important to

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<sup>180</sup> Some animals *can* self-report. For example, gorillas and chimpanzees have used sign language, bonobos have used keyboards to communicate in languages shared by humans.

<sup>181</sup> Mehrabian (1971) posited that only 7% of human communication is verbal, while 38% is other vocal expression and 55% body language (gestures, expressions and posture). Mehrabian, A. 1971. *Silent Messages*. Belmont, CA: Wadsworth. While these popular statistics have been widely questioned, the general significance of nonverbal communication between humans is broadly accepted. Matsumoto, D. 2019. Nonverbal communication speaks volumes. In *Speaking of Psychology*, ed. Audrey Hamilton. American Psychological Association.

recognize that non-human animals *have* interiors, and to acknowledge non-human animals as stakeholders and decision-making actants in conservation agendas and interventions. Researchers and practitioners can gain insight into non-human animal interiors through study of intuition (Erickson 2011), semiotics, signals and sensory ecology (Martin 2011; Tüür and Tønnessen 2014; Namibian Dolphin Project 2019), animal cognition, cognitive bias, cues and gesture recognition (Bekoff and Goodall 2002; Bekoff 2013; Greggor et al. 2014; Beaver 2019), and social learning (Seidensticker and McDougal 1993; Heyes and Galef Jr. 1996; Range and Viraany 2013). Research in these domains can provide valuable insight into non-human animal minds and help identify ways to mitigate human conflict with non-human animals (including depredation, “pest” issues, and animal attacks), support wild-animal adaptation to human-induced rapid environmental change, and increase long-term success of rewilding and recolonization efforts.

In the Chapter Eight I present an analysis of Mexican wolf reintroduction conflict, utilizing the IE framework to link the individual and collective interiors of human and non-human stakeholders to individual and collective exterior conflict factors.

## CHAPTER 8

### CASE STUDY: MEXICAN WOLF REINTRODUCTION

#### 8.1 Overview

Under the investment and direction of the federal government, Mexican wolves were completely eradicated from the U.S. in the 20<sup>th</sup> century in an effort to alleviate depredation pressures on ranchers. Decades later, by mandate of the ESA and under direction of the FWS, Mexican wolves from a captive bred population were reintroduced into part of their historic range within the largest wilderness area in the Southwest, which straddles Arizona and New Mexico. Reintroduction of wolves is broadly supported by the American public (Defenders of Wildlife 1996), and early polls indicated strong regional support for the reintroduction (Biggs 1988; Johnston 1990; Responsive Management 1995). However, the reintroduction area also supported livestock operations that relied on public lands for grazing. While there was significant local support for reintroduction in both Arizona (Johnston 1990) and New Mexico (Biggs 1988; Responsive Management 1995), local ranchers were not receptive to the Mexican wolf's return.

In 2014, FWS proposed expanding the Mexican wolf recovery area to allow wolves to disperse more broadly; a necessary step to improve genetic diversity in the wild population. Public comments to the proposed expansion are revealing of the psychological and cultural influences driving and impeding Mexican wolf conservation. This case study presents a qualitative analysis of 2014 public stakeholder comments on the proposed expansion of the Mexican wolf recovery area. The analysis identifies

conceptual themes in comments by individuals advocating for, and individuals opposed to, expansion of the Mexican wolf recovery area.<sup>182</sup>

Utilizing an Integral Ecology framework, this analysis contextually situates and links psychological and cultural factors with behavioral and social factors influencing Mexican wolf conservation. The analysis contributes knowledge on the links between the individual and collective subjective perspectives, and the individual and collective objective perspectives of Mexican wolf conservation. This research enhances relational knowledge on human-predator coexistence in the U.S. Southwest and serves as an entry point to conflict resolution and improved conservation management for Mexican wolves. Four research questions are specifically addressed.

## 8.2 Research Questions

In Mexican wolf conservation:

1. What are the beliefs and attitudes (psychological perspectives) of stakeholders?
2. What worldviews and values characterize the cultures of stakeholders?
3. What materialities and behaviors are chief conflict factors?
4. What are the dominant power structures?
5. What are the narrative links between psychological, cultural, behavioral, and structural factors complicating Mexican wolf recovery?

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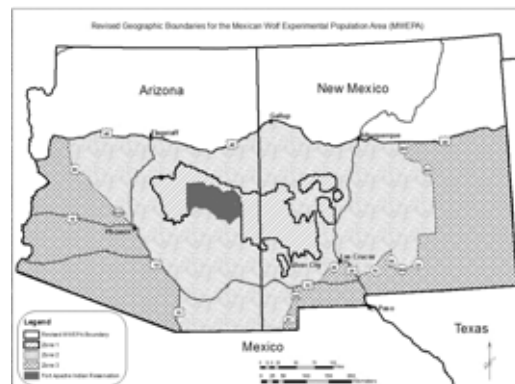
<sup>182</sup> I specifically resisted placing individual speakers *a priori* into stakeholder categories of ranchers and conservationists because those categories are not mutually exclusive. The analysis examines pro and opposing stakeholder comments in the context of stakeholder livelihood or profession but avoids pre-contextualizing the analysis as a livelihood or industry-specific binary.

### 8.3 Mexican Wolf Recovery Proposed Expansion

In 2011, the first wolves were released into Mexico, and subsequently wolf packs have established south of the U.S. border. Because wolves are a historically transnational species, the establishment of a wolf pack in Mexico prompted FWS to issue a proposal in 2014 to expand the protected Mexican wolf area to the international border in order to maintain wolf habitat connectivity (Guertin 2015).<sup>183</sup> The proposed expansion also extended the recovery area further east and west to Arizona and New Mexico borders, with the northern boundary defined by Interstate 40 (I-40). The expanded recovery area would theoretically alleviate wolf pressure on the previously concentrated BRWRA (Guertin 2015) (Figures 8.1 and 8.2). The proposed expansion was applauded by individuals and conservation groups nationwide (FWS 2017b), and received strong local support, including support of some ranchers, hunters, and hunting organizations (FWS 2017b). However, the expansion proposal was met with significant resistance by some local ranchers and regional livestock organizations (FWS 2017b).



*Figure 8.1.* Mexican wolf Blue Range Wolf Recovery Area (BRWRA) as designated by final FWS rule in 1998 (Guertin 2015).



*Figure 8.2.* Mexican wolf Experimental Population Area (MWEPA) as designated by final FWS rule in 2015 (Guertin 2015).

<sup>183</sup> This proposal was made in response to a lawsuit by conservation organization, The Center for Biological Diversity.

## 8.4 Mexican Wolf Reintroduction Conflict

Like other wolf recovery efforts in the U.S. and around the world, Mexican wolf recovery has been controversial.<sup>184</sup> While many hailed the return of the wolf to the Southwest, the 1998 reintroduction created a localized public outcry over fear of livestock depredation and wolf attacks on humans (FWS 2017b). A few ranchers have been especially outspoken in media.

The initial reintroduction of Mexican wolves was a relatively top-down effort led by FWS in compliance with the ESA mandate to protect wolves as a national asset. FWS anticipated local opposition to Mexican wolf recovery, and reintroduced Mexican wolves under a special ESA designation (the 10(j) rule), which allowed them flexibility to manage the social challenges of the reintroduction. However, in serving a broad scale American agenda to protect a native endangered species on public lands, FWS gave comparatively little attention to local stakeholder needs and did not actively seek participation in the reintroduction effort from local ranching communities.<sup>185</sup>

As detailed in earlier chapters, ranching on public land has historically come into conflict with public land conservation uses, and long-standing tensions exist between local ranchers, conservation organizations, and federal agencies (Brunson and Huntsinger 2008; Coffman 2012; Sheridan 2012 org. 1995; Roche et al. 2015). The top-down wolf conservation effort by a federal agency contributed to existing tensions between ranchers

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<sup>184</sup> The 1994 Environmental Impact Statement (EIS) for wolf reintroduction in Yellowstone and central Idaho received 160,000 public comments, at the time more public comments than any other federal proposal. NPS. 2019. Wolf restoration. <https://www.nps.gov/yell/learn/nature/wolf-restoration.htm>. (accessed 31 August 2019).

<sup>185</sup> FWS conducted research on social tolerance of wolves and held informational meetings but did not engage local residents in the planning and implementation of the recovery plan.



and the federal government, and it was perceived by some ranchers as an attempt by special interest groups to dispossess them (Mexican Wolf/Livestock Coexistence Council 2014).

In response to the initial backlash of Mexican wolf reintroduction, FWS has made efforts to engage with local stakeholders and has expanded cooperative conservation efforts with state agencies, livestock organizations, and conservation organizations. Despite inter-agency cooperation and increased engagement with conservation and ranching groups, anecdotal comments made in public forums and in newspapers indicate that conflict over Mexican wolf recovery is not only persistent but has become more complicated.

A vocal set of detractors (mostly ranchers and livestock organizations) continues to contest the recovery effort on the basis of livestock depredation (or fear of depredation) and fear of attacks on humans and pets. Distrust of science, historic federal government failures or transgressions, politics, perceived institutional and agency overreach, and wolf management practices are now added grievances of residents in the Mexican wolf recovery area. While the role of FWS is to protect fish and wildlife, many conservation advocates also take issue with the Agency. Like local residents, conservation advocates cite the Agency's failures, transgressions, politics, and wolf management practices, but their grievances are contextualized differently than those of ranchers. Unlike ranchers who argue FWS is overreaching, conservation advocates typically argue the agency is not addressing its legal mandate. Boundaries, land use, entitlements, responsibility, and accountability are contentions of all stakeholders (FWS 2017b). Both conservation and livestock organizations have pushed legislative action at

state or federal levels and have brought lawsuits against FWS over the recovery program (FWS 2017b).<sup>186</sup> The following sections profile key conflict issues in Mexican wolf recovery: The ecological imperative; livestock depredation economics; contested science; fear of attacks on humans and pets; wolf management; issues of scale; and ideological differences.

#### 8.4.1 The Ecological Imperative

The ESA mandates recovery efforts for endangered species regardless of economic, cultural or ecological value. However, charismatic appeal (and by extension economic value for tourism), as well as the paradoxical vulnerability and critical ecological functionality of large (and often fierce) predators, have evoked broad support to protect and in some cases re-introduce large predators, even when doing so presents co-existence concerns (Weiss et al. 2007, Woodroffe et al. 2005).<sup>187</sup>

Top predators such as wolves have value as ecosystem regulators. Wolves prey on herbivore populations that consume primary producers such as grasses and trees.

Predation helps keep ungulate populations from exceeding the land's capacity to support

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<sup>186</sup> In February 2014 Arizona's Senate Government and Environment Committee approved measures: SB1211, allowing USDA to kill MX wolves without federal prosecution Arizona State Legislature. 2014b. Mexican Wolf; Taking; Reporting. In *SB1211*, ed. State of Arizona. and SB1212, securing \$250,000 for litigation expenses ---. 2014a. Appropriation; Wolf Recovery; Litigation Costs. In *SB1212*, ed. State of Arizona. *ibid.* In 2018 AZ Senator Jeff Flake (R) introduced a bill to remove Mexican gray wolves from the Endangered Species List. Loomis, B. 2018. 100 wolves enough? Jeff Flake wants to remove federal protections for Mexican gray wolves. In *Arizona Republic*. Phoenix, AZ.

<sup>187</sup> Top predators are particularly vulnerable to environmental change because they mature and reproduce slowly, they are dependent on prey availability, they require a lot of range land and habitat connectivity, and they are often targets for poaching or retaliatory killing. Sunquist, M. E. & F. Sunquist. 2001. Changing landscapes: Consequences for carnivores. In *Carnivore Conservation*, eds. John L. Gittleman, Stephan M. Funk, David W. MacDonald & Robert K. Wayne, 399-418. Cambridge, UK: Cambridge University Press.

them. Wolves often prey on old, sick or diseased animals, effectively culling the weak from ungulate herds thereby keeping herds healthier (Ripple 2003).<sup>188</sup> Wolves leave carcasses to be scavenged by other animals (Wilmers and Post 2006). When a top predator species such as wolves is eliminated, ungulate populations typically boom. This rapid population growth can result in extensive browsing of new tree growth, trampling, and destruction of tree bark, which hinders the growth of forests and can disadvantage native species favored by grazers (USDA Forest Service 2013). Elimination of predators also reduces a food source for non-predatory carnivores dependent on carrion left by predators such as wolves (Wilmers and Post 2006).

Predator impact on prey flows down trophic (feeding and nutrient) levels of an ecosystem. This process is known as a trophic cascade (Hairston, Smith and Slobodkin 1960).<sup>189</sup> Top predators influence both prey abundance and prey behavior. For instance elk are known to specifically avoid high density wolf areas in Yellowstone National Park, and this has reduced browsing pressure in those areas allowing regrowth of aspen trees that had been in decline since the 1920s (correlating to wolf eradication from the Yellowstone landscape).<sup>190</sup> Not all predators hunt the same prey, hunt in the same manner, or leave carrion in similar ways. While there is some overlap of predation and

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<sup>188</sup> Wolves are opportunistic hunters and will also select very young animals or lone animals due to their vulnerability. Thus, it is not necessarily the age or health of an animal, but its vulnerability that warrants selection.

<sup>189</sup> Trophic levels were historically viewed as bottom-up (i.e. a food chain). The top-down effect (or cascade) refers to the influence top level consumers have on lower level consumers, and vicariously on ecosystems.

<sup>190</sup> Kaufman et al. (2010) questioned the possibility of this behaviorally mediated trophic cascade in Yellowstone. Kaufman, M. J., J. F. Broadie & E. S. Jules. 2010. Are wolves saving Yellowstone's aspen? A landscape-level test of a behaviorally mediated trophic cascade. *Ecology*, 91, 2742-2755.

consumption behavior by different species, functional redundancy cannot be assumed. Therefore, a healthy ecosystem needs a diversity of predator species. The important regulating role of predators has become a central force behind top predator conservation efforts. In addition to serving cultural interests and meeting institutional mandates, predator reintroductions are utilized as the foundation for rewilding damaged ecosystems. Contemporary arguments advocating for Mexican wolf reintroduction often invoke the wolf's ecological role.<sup>191</sup>

#### 8.4.2 Issues of Scale

American wildlife and wild lands are considered national assets. The ecoservices provided by predators benefit public lands. Federal wildlife conservation efforts are funded at the federal, state, and regional levels and are subsidized by conservation organizations that bear significant costs associated with captive breeding, education, and implementation of compensation programs. All Americans are essentially stakeholders in American wildlife and public lands conflicts.

However, conservation efforts have direct impacts on the communities and economies in which they are localized, and predator conservation efforts often generate strong local resistance. Local resistance can cripple recovery efforts, so long-term

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<sup>191</sup> Though the initial reintroduction of Mexican wolves was a response to an ESA mandate, it subsequently became apparent to conservation scientists that the absence of large predators resulted in damaging effects to ecosystems where top predator numbers had been drastically reduced. Efforts to reintroduce large predators, including Mexican wolves, now have goals of ecosystem restoration in addition to species conservation, and this has complicated messaging and assessment of conservation efforts. There has been some concern expressed by hunting outfitters over Mexican wolf impact on ungulate populations, but a deleterious impact on ungulate populations has not been substantiated.

survival of recovered species hinges on local tolerance for coexistence. When predator species recover, they can be delisted from the ESA, which positions them to be killed in retaliation for depredation. Several states have reinstated legal wolf hunting. Gray wolves were delisted in the Northern Rocky Mountains and Great Lakes regions in 2011 because FWS determined they had recovered (FWS 2018d). Idaho, Montana and Wyoming all held wolf hunting and trapping seasons the next year, resulting in the killing of 570 wolves by the end of the year. Other states soon followed with similar kill counts (Rocky Mountain Elk Foundation 2013). Without local support, a recovered species can quickly lose ground, so developing local tolerance for coexistence, and ideally a commitment to predator conservation is key to long-term success.

#### 8.4.3 The Economics of Livestock Depredation

Ranchers in the Mexican wolf recovery area have opposed Mexican wolf conservation with economic arguments supported by claims of livestock depredation. Some depredation has been verified and constitutes legitimate financial loss (FWS 2017b). The BRWRA encompasses rural, sparsely populated areas with small private ranches adjacent to or surrounded by public lands (Raish and McSweeney 2001; Ashcroft et al. 2012).<sup>192</sup> Ranchers in this region are highly reliant on federal permits to graze their

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<sup>192</sup> Many ranches in this region have as little as 50 animals, which is small compared to average ranch size in other parts of the Southwest. Ranches in this area were not always small in size. Privately owned lands in Northern New Mexico were considerably degraded by ranching and timber operations in the 18<sup>th</sup> and 19<sup>th</sup> centuries. When degradation yielded the lands no longer profitable, lands were sold back to the federal government, which then leased grazing permits back to ranchers. New Mexico has 35 percent fewer livestock animals than Arizona, but twice as many federal grazing permits on national forests than Arizona. The circumstances surrounding these land exchanges contributes to a contentious history between ranchers and the federal government. Raish, C. & A. McSweeney. 2001. Livestock ranching and traditional culture in Northern New Mexico. *Natural Resources Journal*, 41, 713-730.

livestock on the public lands surrounding their private ranches (Raish and McSweeney 2001; Ashcroft et al. 2009), and they employ semi-open range ranching practices in which livestock are not closely monitored or tended to. Open range livestock in the Mexican wolf recovery area are subject to depredation by numerous predators including wolves, mountain lions, bears, and coyotes, but depredations by all predators constitute a small percentage of cattle loss.<sup>193</sup> Most livestock die by non-predator causes including old age, disease, starvation, birthing problems, inclement weather, and unknown non-predator causes (USDA APHIS 2017a; USDA APHIS 2017b). In 2012, total depredations accounted for 0.1 percent of the regional inventory of estimated ranch cattle, and confirmed Mexican wolf depredations accounted for just 0.02 percent of total depredations for that year (FWS 2012) (Appendix D, Tables D.1 and D.2).<sup>194</sup>

In the 14-year period (between 1998 when the first five wolves were released and 2012 when there were an estimated 75 wolves in the wild), there were a total of 184 confirmed Mexican wolf depredations. This averages to an estimated 12.3 depredations per year, or approximately 1.2 depredations per year, per wolf (FWS 2012). The actual number of Mexican wolf depredations predictably increases as wolf numbers increase, and based on historic depredation statistics, FWS estimates an ongoing average of 130 livestock deaths per 100 Mexican wolves in the U.S. annually (~1.3 cattle per wolf per

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<sup>193</sup> A study by Breck et al. (2011) on depredations of monitored livestock in the BRWRA found that 67.5% of depredations of livestock monitored for the study were by mountain lions. Breck, S. W., B. M. Kluever, M. Panasci, J. Oakleaf, T. Johnson, W. Ballard, L. Howery & D. L. Bergman. 2011. Domestic calf mortality and producer detection rates in the Mexican wolf recovery area: Implications for livestock management and carnivore compensation schemes. *Biological Conservation*, 144, 930-936.

<sup>194</sup> FWS calculates this as 91 total depredated cattle in the BRWRA divided by the 2012 estimate of ranch cattle (97,686) in the five counties. BRWRA FWS. 2012. Environmental impact statement for the proposed revision to the regulations for the nonessential experimental population of the Mexican wolf. In *Mexican wolf recovery program*. Washington, DC: United States Fish and Wildlife Department.

year). This represents a total market value of approximately \$130,000 per year (FWS 2012).<sup>195</sup>

At the start of the reintroduction program, Defenders of Wildlife established a compensation fund which paid livestock owners 100% of market value for confirmed Mexican wolf kills, 50% of market value for probable Mexican wolf kills, and 100% of veterinary bills for animals injured by Mexican wolves. The fund did not compensate ranchers for indirect costs such as non-lethal physiological impacts on livestock, changes in livestock foraging due to wolf presence, and additional supply and labor costs associated with changing ranching practices to accommodate (or combat) predator presence (Ashcroft et al. 2009; FWS 2012). Additionally, some ranchers felt they had reasonable wolf depredation claims that were not compensated because inspectors could not confirm deaths as wolf-caused.<sup>196</sup>

In 2010, the Defenders of Wildlife fund was terminated and replaced in 2011 by a federal fund supported by the Agricultural Act of 2014 (the Farm Bill) administered by the newly established Mexican Wolf/Livestock Coexistence Council. The Council is composed of area ranchers, conservation organization representatives, tribal representatives, and two Arizona and New Mexico rural county coalitions with a goal to support “viable ranching, self-sustaining wolf populations and healthy landscapes in the

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<sup>195</sup> This figure represents the market value of livestock. The figure does not account for additional indirect costs incurred specifically for Mexican wolf depredation, and it cannot be assumed to be an evenly distributed cost as depredation impact is unevenly distributed.

<sup>196</sup> Remote location, delay in examination of site, scavenging by other animals, and animal decay can make confirmation of a depredation by a particular predator difficult. FWS. 2012. Environmental impact statement for the proposed revision to the regulations for the nonessential experimental population of the Mexican wolf. In *Mexican wolf recovery program*. Washington, DC: United States Fish and Wildlife Department.

American Southwest (FWS 2019e)”. The council grants funds for nonlethal deterrence measures and depredation compensation.<sup>197</sup>

Research suggests that depredation by Mexican wolves is unevenly distributed geographically (some ranches incur more depredation than others), temporally (depredation can occur more in drier seasons and when wild prey populations are low), and within the predator populations (multiple confirmed kills can be attributed to a single animal) (Ashcroft et al. 2009). This uneven impact offers clues as to why some ranchers are especially ambivalent about the Mexican wolf recovery effort, and insight on potentially effective depredation deterrent measures.<sup>198</sup> Additionally, Ashcroft et al. (2009) report strong ranch community ties in the wolf recovery area and assert that depredation does not occur in isolation. Rather, the effects are amplified because losses from depredation can be experienced by a community in the way that a family might experience a loss. This sense of shared loss may be related to the overall exaggerated perception of depredation loss specifically to wolves. Wolves kill differently than predators such as mountain lions. The way wolves kill, and the narrative exaggeration of the way wolves kill, sets them apart from other predators in the context of depredation.

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<sup>197</sup> In 2016 additional funding was made available to “pay for presence” of wolves. These funds are intended to assist with the costs of implementing proactive wolf deterrents that could prevent or reduce depredation. ---. 2019b. Reducing wolf-livestock conflict. (accessed 31 August 2019). Notably, this funding mechanism was implemented after the hearings in this case study.

<sup>198</sup> Subsidies and other assistance provided to ranchers for wolf deterrent measures include hay provisions for keeping livestock consolidated during calving season, rotating livestock between grazing allotments to avoid high activity wolf areas such as denning and rendezvous sites, fencing to enclose areas of private property, contract range riders to monitor cattle in relation to wolf movement, use of radio telemetry equipment to identify wolf locations and to monitor or move cattle accordingly, use of turbo fladry (and electric fence with red flagging) around livestock holding pastures and private property to discourage wolf crossing, and providing a diversionary food cache to wolves (such as road killed native prey carcasses). Ibid.



Economic arguments have been made for the direct use, indirect use, and non-use value of wolves (Kroeger, Casey and Haney 2006; Weiss et al. 2007). Direct use values include increased recreation tourism, positive employment, revenue impacts (including at the local scale), increased utility for recreationists, and educational activities. Indirect use values include increased provision of ecosystem services resulting from the ecosystem-regulating functions of wolves. Non-use values include those highlighted in 1967 by Krutilla as existence, stewardship and bequest values (Krutilla 1967; Kroeger et al. 2006). A Mexican wolf reintroduction cost-benefit analysis by Kroeger et al. (2006) accounted for all types of use values against all types of costs (including those to livestock owners, public agencies, and conservation organizations), and determined a net annual local economic benefit for Mexican wolf reintroduction of \$3.2 to 3.8 million, and an annual net national scale benefit of \$13.2 to \$44.6 million.<sup>199</sup>

#### 8.4.4 Fear of Mexican Wolves

Though wolves are physically able to kill large animals, wolves are noted for their avoidance of humans (FWS 2017b). Wolf attacks on humans are rare and have historically been attributed mostly to rabid or defensive wolves (Linnell et al. 2002b). There are no documented historical or contemporary accounts of a Mexican wolf attacking a human, and Mexican wolf attacks on pets are uncommon (FWS 2013). FWS reports just 25 pet injuries and 8 dog fatalities by Mexican wolves over a 19-year period

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<sup>199</sup> Value estimates were calculated separately for local and national scales to account for differences in non-use value and direct impacts at the different scales. Estimates were calculated based on data for period between 1998-2004. Kroeger, T., F. Casey & C. Haney. 2006. Reintroduction of the Mexican wolf (*Canis lupus baileyi*) to the Southwestern United States: An economic perspective. In *18th Annual North American Wolf Conference*. Chico Hot Springs, MT.

(1998-2017).<sup>200</sup> Nevertheless, residents of communities in the BRWRA have consistently cited fear of Mexican wolf attacks on humans and pets as a reason for opposition to regional wolf recovery.

#### 8.4.5. Power Struggles

The contextualization of humans as predators is also extended to the federal government. Conservative activist David Spady's 2013 anti-wolf documentary *Wolves in Government Clothing* states "*When federal government agencies become predators, they begin to look like wolves. In the end it's up to the American people to realize that these predators will control us...unless we control them* (Spady 2013)."<sup>201</sup> The film's website also features cut and paste anti-wolf public comments, anti-ESA petitions, and a call for sovereign citizenship. The metaphor of wolves as proxy for the federal government blends narrative of the cunning nature of wolves with narrative of a corrupt and meddling federal government.

Conflict between ranchers and the federal government has a long history, dating to the mid-19<sup>th</sup> century. Land in the Southwest was made available for ranchers to purchase for a minimal cost via several land Acts, because at the time westward expansion was in the national public interest economically and in terms of establishment

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<sup>200</sup> While these numbers are low, emotional attachment to pets is typical, so the impact of a single lost pet could be long lasting. FWS. 2017b. Mexican wolf – livestock/pet conflict in the Mexican Wolf Experimental Population Area 1998-2017. Washington, DC: United States Fish and Wildlife Services.

<sup>201</sup> A California-based filmmaker, Spady is active in conservative politics. He serves as State Director for the Koch brothers-founded Americans for Prosperity and is affiliated with the American Principals Institute; both organizations aggressively advocate for limited government.

of U.S. territory (i.e. to prevent settlement of others including American Indians, Mexicans, and Canadians).<sup>202</sup> The culture of ranching communities in Arizona and New Mexico began as (and still is) one of autonomy, and people in this region lived for decades with little-to-no government oversight. Ranchers overgrazed their lands and after the severe drought in 1890-92 the devastated livestock loss, many ranches were downsized, and private lands were returned to the federal government. Ranchers then had to pay federal grazing fees in order to ranch their cattle on public lands adjacent to their private lands because grazing cattle on desert or semi-arid land required acreage significantly beyond their private holdings. This created a dependency incongruous with the autonomous culture.<sup>203</sup> Despite the attraction of water subsidization and fire management that comes with leasing grazing rights rather than owning land, dependency on federal lands and the accompanying federal oversight has not meshed well with ranching culture in this region. The loss of independence and associated uncertainty of land control created a level of tension between ranchers and federal land agencies that has persisted.

American interest in conservation of public lands was seeded in the mid-19<sup>th</sup> century but grew significantly in the early 20<sup>th</sup> century when public lands were set aside for national forests, national parks, national monuments, and wilderness areas. Many of these lands supported livestock grazing. During this period there was a general ideology

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<sup>202</sup> Notable Federal land acts benefiting ranchers include the Homestead Act of 1860, the Desert Land Act of 1877 and the Stock Raising Homestead Act of 1916.

<sup>203</sup> When the government stepped in to assist ranchers with wolf eradication in 1915, this created an additional level of government dependency for ranchers.

favoring centralized government as an important economic regulator. Through the first third of the 20<sup>th</sup> century, cattle ranchers were able to leverage political power as they had ample representation in state and federal legislatures and within federal land agencies. However, a rise in public interest in conservation (related to overgrazing of public lands) ultimately led to legislation that imposed government oversight of ranching. The 1934 Taylor Grazing Act was enacted to enforce sustainable grazing use on public lands, and the ESA and EPA have since invoked other mandates for sustainable use of public lands. While sustainable grazing directly benefits ranchers, and other environmental regulations benefit ranchers vicariously as they do the greater public, these institutions are viewed amongst some ranchers as government intrusion. Though ranchers do not own public land, there is a *defacto* norm for ranchers to have some control over its use, and these norms are tied to ranching traditions and historic land tenure structures.<sup>204</sup>

Political ideologies have a significant influence on Mexican wolf recovery. There is broad anti-government sentiment in southwest ranching communities today (and in other parts of the West), mostly directed toward the federal government by individuals and groups who support increased state's rights and localized control (Siegler 2018). This anti-government sentiment fuels and is fueled by a rising populist movement

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<sup>204</sup> Tensions over use and control of public lands have not been strictly between livestock owners and the federal government. Railroad, mining, and timber companies have sought control, and environmental groups have consistently pushed back on resource use and extraction on public lands. Additionally, conflict was common between livestock owners for use and control of land, for example between cattle and sheep ranchers. Group, J. 2019. Sheepmen vs. cattlemen. <http://www.jcs-group.com/oldwest/wars/sheepmen.html>. (accessed 7 July 2019).

characterized by a distrust of big government and an anti-establishment ideal, which impacts governance of wildlife conservation (Manfredo et al. 2017).<sup>205</sup>

Political ideologies are extensions of beliefs and values and are thus tied to utilitarian or mutualist value orientations. A study by Teel et al. (2005) on wildlife values in the West found that the percentage of mutualist and utilitarian orientations was relatively balanced over the collective West (defined broadly by Teel et al. as west of the Mississippi River), but individual states often skewed a certain way, some dramatically.<sup>206</sup> Interestingly, California, with a very low rate of utilitarianism also had the highest rate (more than twice that of many rural states) of individuals distanced from wildlife. Less urbanized states had lower percentages of distanced orientation (Teel et al. 2005), which may be reflective of greater engagement with nature and likewise indicative of the importance of engaging rural communities in localized conservation efforts. Arizona and New Mexico were only slightly skewed toward utilitarianism (Teel et al.

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<sup>205</sup> Two notorious conflicts include armed standoffs with the Federal Government. A 21-year dispute between Cliven Bundy and the BLM ended in an armed confrontation in 2014. The case was dismissed by a federal judge in 2019. In 2016 armed militants (led by Cliven Bundy's sons, Ammon and Ryan) seized and occupied the headquarters of an Oregon National Wildlife Refuge on the pretense of protesting what they believed to be the wrongful federal land arson conviction of two ranchers. Ammon and Ryan Bundy (and five others) were acquitted in 2016 of charges related to the standoff. Johnson, K. 2018. Charges against Bundys in ranch standoff case are dismissed. New York: The New York Times. The two originally convicted ranchers were pardoned by President Trump and had their grazing leases reinstated in 2019. AP. 2019. Ranchers whose case sparked standoff get grazing rights back. New York: Associated Press. Both of these standoffs, while contextualized as ranching conflicts, were driven by political ideology and the desire for a decentralized government.

<sup>206</sup> Teel et al. also recognize a pluralist orientation, in which both utilitarianism and mutualism are held and are situationally contingent, as well as a distance orientation in which individuals are removed from the wildlife issue and do not hold either mutualism or utilitarian views. Teel, T. L., M. J. Manfredo & A. D. Bright. 2005. Regional results from the research project "Wildlife Values in the West". ed. Human Dimensions in Natural Resources Unit Colorado State University. Fort Collins, CO: Western Association of Fish and Wildlife Agencies.

2005).<sup>207</sup> However, Teel et al. also found that urbanization and mutualism are co-related, and theorize that societal movement toward mutualism is occurring through urbanization (Teel et al. 2005). Teel et al.'s conclusion suggests that stakeholders located in the rural Mexican wolf recovery area will skew toward utilitarianism and are more likely to hold a worldview of human dominion over Nature than stakeholders living in urban areas outside the wolf recovery area. Such a worldview would be incongruous with sharing space with wolves.<sup>208</sup>

#### 8.4.6 Contested Science

Local stakeholders have contested the science of Mexican wolf recovery, including the capacity of the land to support wolves, the number of wolves necessary for species recovery, the legitimacy of the Mexican wolf's status as an endangered species, and the nature of wolf behavior.

The genetic purity of Mexican wolves has long been contested by recovery dissenters who argue that at least some of the founder wolves were wolf-wild dog hybrids. Contesting the purity of Mexican wolves challenges their protected status, as a hybrid population would not garner protection under the ESA. FWS maintains that the

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<sup>207</sup> The collective West utilitarianism-mutualism breakdown was 34% utilitarian, 33% mutualist, 20% pluralist, and 13% distanced, but was varied more by state. Far west states like Hawaii, California, and Washington had low utilitarianism percentages and mostly less urbanized states reporting more utilitarian. AZ results were: 38.8% utilitarian 34.0% mutualist, 16.9% pluralist, and 10.3 % distanced. NM results were: 35.2% utilitarian, 31.9% mutualist, 23.9% pluralist, and 9.0% distanced. Ibid.

<sup>208</sup> The Colorado distribution of orientations was similar to those in AZ and NM with 34.1% utilitarian, 34.9% mutualist, 21.8% pluralist, and 9.2% distanced. Ibid. However a 1996 study revealed seven out of ten Coloradans were in support of wolf reintroduction. Manfredo, M. J. 1996. Coloradans' attitudes toward reintroducing the gray wolf into Colorado. *Wildlife Society Bulletin*, 24, 421-428. This indicates that utilitarianism and wolf tolerance are not mutually exclusive.

founder wolves have all been confirmed as genetically pure. Public misunderstanding of genetic science has resulted in arguments against reintroduction of more captive wolves on the basis on genetic redundancy. FWS maintains that 81 percent of the genetic diversity of the population has been retained within total population, and most of this diversity remains amongst captive wolves (FWS 2017e).

FWS estimates that the 4.4 million acres of Gila and Apache National Forests have a carrying capacity of 468 wolves. The initial Species Survival Plan (SSP) stated a conservative goal of “at least” 100 Mexican wolves in the wild (FWS 2017b). The number of wolves in the wild now exceeds 100, and there has been fluctuation in the FWS target population number due to the uncertainties of recovery. Recovery hinges on biological aspects such as genetic viability, social aspects such as mating and hunting success, access to connected healthy habitat, successful captive breeding and cross-fostering, successful reintroduction, and long-term survival of newly reintroduced wolves (FWS 2009; FWS 2017b).<sup>209</sup> Some recovery dissenters have taken issue with the moving target of total wolves in the wild because it creates uncertainty and insecurity for them as livestock owners and residents living in close proximity to wolves. The ambiguity of population goals is directly influenced by social and political and social uncertainty driven by local and livestock industry intolerance of Mexican wolves because wolves are killed as a result of this intolerance, and the wild wolf population goal rises with risk of wolf loss (FWS 2017b). A five-factor analysis of threats conducted by FWS determined

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<sup>209</sup> Many released Mexican wolves die within their first year of release and have lower first year survival rates than those wild born. FWS. 2017c. Mexican wolf recovery plan: First revision. Albuquerque, NM: Department of the Interior. U.S. Fish and Wildlife Service. Southwest Region (Region 2).

that the Mexican wolf was in danger of extinction due to illegal shooting, loss of genetic diversity, and small population size (FWS 2017b).

Conservation organizations argue that FWS is not doing all it can do to expand the genetic diversity of the wild population, citing among other things, FWS' refusal to release well bonded family packs into the wild (Robinson 2019), but dissenters have contested the scientific basis for continuing to reintroduce more wolves. Approximately 300 Mexican wolves are currently in 49 U.S. and Mexican facilities where they are bred in captivity with a goal of reducing kinship in wild populations (FWS 2019a). Genetic diversity in the wild population relies on introduction of captive wolves because the captive population has higher gene diversity than the wild populations (FWS 2009).<sup>210</sup> Without genetic diversity in the wild population there is little assurance the population will remain robust over time or be able to adapt to environmental change (FWS 2017e). Due to local resistance to Mexican wolves, FWS has released fewer wolves than optimal and has restricted Mexican wolf territory. These actions limit genetic diversity in the wild population; a risk factor that drives wolf goal populations higher (FWS 2017b).

Wolf ethology is also broadly misunderstood. Dissenters have argued that wolves kill for fun, that they are wasteful, and that they stalk the local children. There is no scientific evidence to support the first two claims and no verified documentation for the

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<sup>210</sup> Gene diversity of wild Mexican wolf populations can also be influenced through the dispersal of wolves from one wild population to another.



latter, so these claims are likely due to the influence of narrative or misunderstanding of wolf hunting, scavenging, surplus killing, and social feeding behaviors.<sup>211</sup>

FWS actively manages Mexican wolf reproduction, location, and behavior, intervening in their individual and social lives. Mexican wolves are captive bred, collared, strategically introduced to specific wild areas, and wolf pups are cross-fostered (FWS 2009).<sup>212</sup> FWS also provides supplemental food for Mexican wolves in the wild (i.e. ungulate carcasses), in part to provide easy access to nutrition for wolves in dry or denning seasons, and in part to deter livestock depredation.

The scientific justification for wolf territory boundaries is widely contested. FWS focuses recovery efforts on one large population south of I-40. The use of I-40 as the northern boundary line for the recovery area is contested by conservation advocates because it does not delineate the edge of suitable wolf habitat. Rather, it is an arbitrary boundary that is easily recognized by people, but not by wolves.

Because the better part of historical wolf territory was in Mexico, some stakeholders have argued that the U.S. population is no longer necessary.<sup>213</sup> Other stakeholders (including FWS), are concerned about increasing connectivity to Mexico in order to maintain populations in both countries. In Mexico, wolf recovery is focused in

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<sup>211</sup> Occasionally wolves and other predators will surplus kill. This phenomenon is not fully understood but is thought to relate to cues given by prey rather than intentional or habitual wastefulness.

<sup>212</sup> Cross-fostering is the practice of taking pups from one captive nursing wolf and introducing them to a wild nursing wolf who acts as a surrogate mother. It is a means of infusing new genetics into the wild population.

<sup>213</sup> This is more of a territorial argument than a scientific one. Many species collapse to their periphery rather than their core population areas. Peripheral areas have important conservation value as this is where genetic dispersal occurs, and it is often these liminal spaces that provide habitat for species adapting to environmental change.

the northern Sierra Madre Occidental area adjacent to the border, and additional concern over wolves being able to navigate the border barrier to disperse to Mexico has been raised (Peters et al. 2018).<sup>214</sup> As of 2017, the international border between the U.S. and Mexico is constructed of a variety of different barrier types. The barrier includes segments that are impermeable to wolves, sections with vehicular fencing that are theoretically permeable to wolves, and unfenced permeable areas (FWS 2017e). In 2017 Congress allocated additional funds to expand and reinforce the border barrier; the resultant permeability of the barrier for wildlife remains unknown. The border barrier is a large feature that dominates the landscape, and though humans can only speculate on how animals perceive it, it can be assumed animals don't know the politics behind it. Individual wolves and wolf packs have a history of traveling on favored “runways” (travel circuits) (Brown 2002 org. 1983), and permeable areas may not align with historic travel routes.

#### 8.4.7 Mexican wolf Management and the Politics of Conservation

While at its heart Mexican wolf conservation is a biological and ecological endeavor, it has never been a purely scientific intervention. It is foundationally driven by the institutional mandate of the ESA and in particular, the ESA 10(j) Rule, which designates the U.S. Mexican wolf population as “experimental and nonessential”. This

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<sup>214</sup> The U.S.-Mexico border barrier and militarization of the border is a significant impediment to migration and range of terrestrial species. In 2018 more than 2700 scientists signed a letter of environmental concern over the border wall. Peters, R., W. J. Ripple, C. Wolf, M. Moskwik, G. Carrerón-Arroyo, G. Ceballos, A. Córdova, R. Dirzo, P. R. Ehrlich, A. D. Flesch, R. List, T. E. Lovejoy, R. F. Noss, J. Pacheco, J. Sarukhán, M. E. Soulé, E. O. Wilson, J. B. Miller & 2566 Scientist Signatories from 43 countries. 2018. Nature divided, scientists united: US–Mexico border wall threatens biodiversity and binational conservation. *BioScience*, 68, 740-743.

designation allows FWS to intensively and selectively manage Mexican wolves in ways that would be prohibited if Mexican wolves were classified as fully endangered (FWS 2009). While the rule allows FWS flexibility to manipulate the population for optimal genetic diversity, detractors of the 10(j) designation argue it was made on the basis of politics, not science. Indeed, one of the stated intentions of the rule is to allow FWS a means to mitigate local resistance to Mexican wolf reintroduction. The rule allows FWS to kill Mexican wolves if they become habitual livestock predators, and to relocate them if they stray out of designated areas. The rule and the implications of its designation are highly contentious. FWS is under pressure by recovery advocates to maximize the rule to do more for Mexican wolf recovery, and under like pressure from dissenters to utilize the rule more to limit wolves and associated impacts.

Finally, there has been pressure on FWS to relinquish management of Mexican wolves and the recovery effort to the states. This is related to the ideologically influenced power struggles described earlier. Both AZGFD and NMGFD have signed memorandums of understanding with FWS and are actively partnering with federal agencies in the recovery effort. However, FWS maintains control and oversight of Mexican wolf recovery efforts, and federal oversight of the goings on in Southwest tends to raise local hackles.

#### 8.4.8 Mexican Wolf Conflict Summary

Livestock depredation by wolves has a contentious regional history (Brown 2002 org. 1983), but the contemporary material threat of Mexican wolves is minor. The threat of a Mexican wolf attack on a human is unsubstantiated; the threat of Mexican wolf

attacks on pets is remote; and Mexican wolf depredation on livestock is statistically insignificant. While there is a cost to depredation, livestock owners do not bear much of it.<sup>215</sup> The statistically insignificant direct impact of Mexican wolves indicates that factors other than wolf behavior are driving opposition to Mexican wolf recovery.

Culturally embedded perceptions of wolves (Linnell et al. 2002a), power-related tensions, territory disputes, public misunderstanding of science, and wolf management practices are persistent conservation challenges, potentially aggravated by the ambiguity afforded by the ESA 10(j) rule. Geographic and temporal scales influence stakeholder needs and desires in opposing ways: Security of current livelihood and autonomy on a local scale are in conflict with security of sustainable ecosystems, and long-term preservation of Mexican wolves on local, regional and national scales.

These conflict factors were all brewing when on June 13, 2013, FWS concurrently proposed a rule to remove the gray wolf (*Canis lupus*) from the Federal List of Threatened and Endangered Species (thereby ceasing recovery efforts); independently list the Mexican wolf (*Canis lupus baileyi*) subspecies as endangered; and expand Mexican wolf recovery efforts in the Southwest (78 FR 35664) (FWS 2015b). While policy battles were raging nationally over the delisting of gray wolves, stakeholders in the Southwest were wrangling over the specifics of Mexican wolf recovery.

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<sup>215</sup> Ranchers have argued that they are not fully compensated for wolf depredation costs. One report determines ranchers are being undercompensated by 18.70% for adult cattle and by 30.66% for calf depredations. Anderson, A., K. Gebhardt & K. N. Kirkpatrick. 2014. Economic analysis of indemnity payments for wolf depredation on cattle in a wolf reintroduction area. *USDA National Wildlife Research Center - Staff Publications*, 1805, 413-418. Nevertheless, the better part of Mexican wolf impact is not absorbed directly by ranchers, but by the conservation community. Additionally, the ancillary benefits of having livestock effectively “insured” by public funding for a certain kind of loss are not calculated into cost assessments.

I investigated the evolution and manifestation of conflict factors in the Mexican wolf recovery effort utilizing public comments to the proposed Mexican wolf recovery program changes as the basis for identifying and linking the psychological, cultural, behavior, and systemic perspectives of stakeholders.

### 8.5 Sample

The proposed rule change was published by FWS July 25, 2014 and public comments were solicited over a sixty-day period. Comments were solicited online, by mail and in person at two public hearings hosted by FWS which took place on August 11, 2014 in Pinetop, AZ and August 13, 2014 in Truth or Consequences, NM. The sample for this study consists of 149 individuals who self-selected to attend the meeting in Pinetop, AZ (PT) (73 individuals), or the meeting in Truth or Consequences, NM (TC) (76 individuals).<sup>216</sup>

The hearings were facilitated by FWS representatives. Each hearing consisted of a presentation on the background of the reintroduction project, followed by a presentation outlining the proposed expansion options, and a comment period, which consisted of individual stakeholder statements limited to two minutes each. Comments were directed to the FWS facilitator and Agency panel. Speakers were instructed not to address their comments to other audience members, so none of the statements reflect verbal exchanges between meeting attendees.

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<sup>216</sup> Statements were made by individuals who elected to speak to FWS before other stakeholders, and to allow their comments to be made public in the form of written transcripts published on FWS website.

There were several limitations to this sample: 1.) FWS released the proposed expansion plans just two weeks prior to the hearings. To speak publicly, stakeholders had to travel to one of the two meeting locations, each which took place at 6:00 pm. Travel time was likely two or more hours for most stakeholders. Short notice, and travel or schedule constraints may have limited the ability for stakeholders to attend in person; 2.) Some stakeholders submitted comments in writing in lieu of speaking, and written comments are not part of this analysis; 3.) The length of the hearing was limited, and speakers testified to the end of each hearing's time limit. Some attendees who wanted to make public comments were not able to, and instead did not comment or submitted comments in writing; 4.) Because of the time and distance involved for stakeholders to attend the meeting, it is likely that attendees were very committed to the issue. Thus, the sample is likely more representative of polar stakeholder positions, and less likely representative of less opinionated stakeholders. While the sample is not representative of the spectrum of stakeholder commitment level, it is representative of key stakeholder *groups*, and was therefore sufficient for the purpose of identifying and linking dominant conflict drivers.

There were several limitations to the data: 1.) The transcripts did not include meta data on the speakers. All information about the speakers was obtained from the text of each speaker's two-minute statement. While all speakers identified their names prior to speaking, additional demographic information was only available if the speaker provided it as part of the statement. Therefore, all data was not present for all speakers; 2.) The two-minute time allotment was advanced by FWS, so speakers were abruptly cut off by the facilitator at the two-minute limit. Speakers who ran out of time before they were

finished speaking were asked to submit comments in writing, so some statements do not represent the whole of what the speaker wanted to say.

## 8.6 Demographics

There was a relative balance in attendance and gender at both hearings.<sup>217</sup>

Speakers were similarly distributed amongst livelihood groups (LG) at the two hearings, with a slightly higher conservation presence in PT (Appendix C, Figure C.1). In both hearings, most stakeholders represented themselves but approximately 40% represented conservation, agricultural, or recreation organizations, government agencies, or as elected representatives, their constituents.

As might be expected, many speakers at both hearings resided or worked in or near the BRWRA, or within areas south of I-40 that supported good wolf habitat (i.e. habitat wolves would likely inhabit in the future). However, a significant number of speakers came from areas not currently impacted or anticipated to be impacted by the presence of wolves, including outside the state, reflecting a notable interest in the issue by stakeholders invested in public land and national or state resource issues (Appendix C, Figure C.2).<sup>218</sup>

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<sup>217</sup> There are 149 speakers total in this study. In Pinetop, AZ there were 73 speakers (37 men and 36 women). In Truth or Consequences, NM there were 76 speakers (45 men and 31 women).

<sup>218</sup> While the proposed recovery area includes all of Arizona and New Mexico south of I-40, wolves will likely inhabit more isolated areas within these boundaries that contain suitable wolf habitat and prey.

## 8.7 Issue Position

Positionally, there was strong overall support for Mexican wolf reintroduction amongst speakers in both PT and TC hearings. While opposition was not strong overall, it was most significant in rural areas (Appendix C, Figure C.2). Not surprisingly, all speakers working in conservation were explicitly pro wolf recovery. Most speakers in the agriculture LG were opposed or leaning opposed to recovery efforts, but nearly a fifth (18.56%) of speakers in this group were explicit on their support for the recovery effort (Appendix C, Figure C.4). Given that pro-wolf ranchers face potential stigma and social backlash in small ranching communities, this fraction of support for wolf recovery may under-represent the true level of support for wolf recovery within the agricultural community and demonstrates that agricultural opposition to Mexican wolf recovery cannot be taken for granted.

Regardless of speaker LG, most speakers in each RWB were explicitly pro-recovery. This was an overwhelming majority in all RWBs except in or near the BRWRA, where there was a relative balance between pro and opposed speakers. Pro positions were more explicitly stated than opposed positions. All out-of-state speakers were explicitly pro-recovery (Appendix C, Figure C.5).

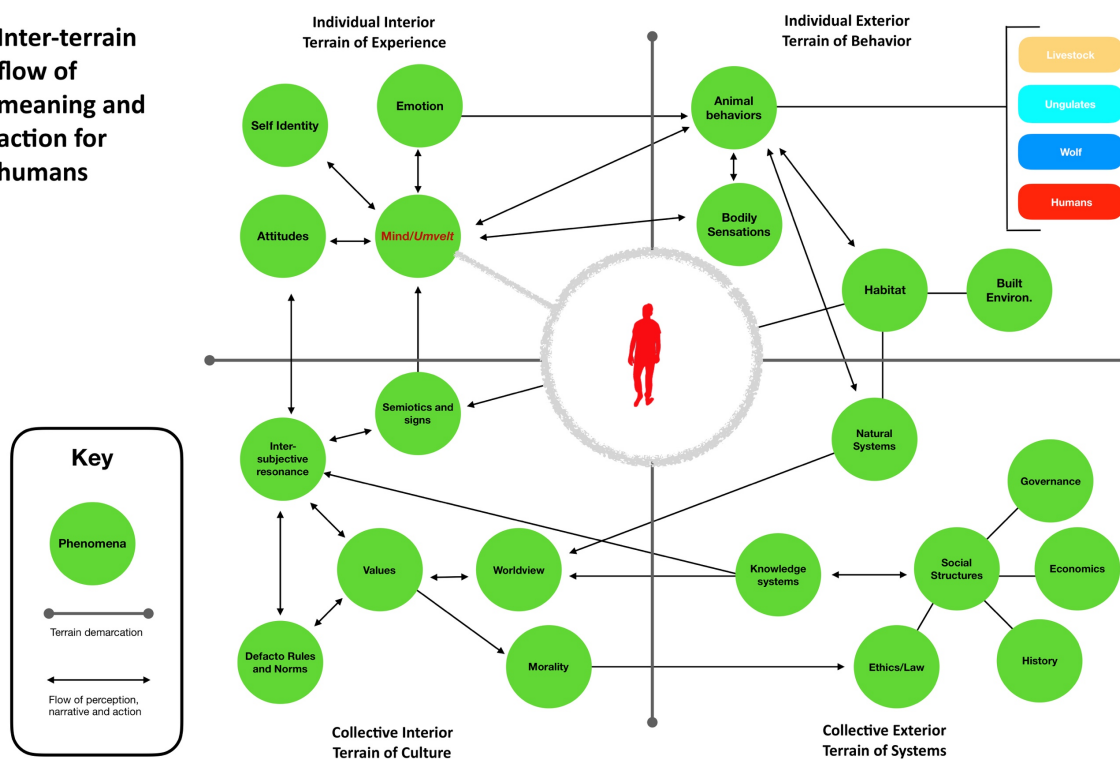
In general, recovery advocates demonstrated their conviction more explicitly than those in opposition, which indicates that opposition to wolf recovery may be more complex (i.e. stakeholders may not be fully opposed to recovery, but are opposed to aspects of the recovery program) or that opinions are difficult to articulate explicitly because opposition is fueled by emotion or tied to cultural factors. The following sections detail the conflict factors explicitly stated or alluded to in comments.



## 8.8 Contributing Factors

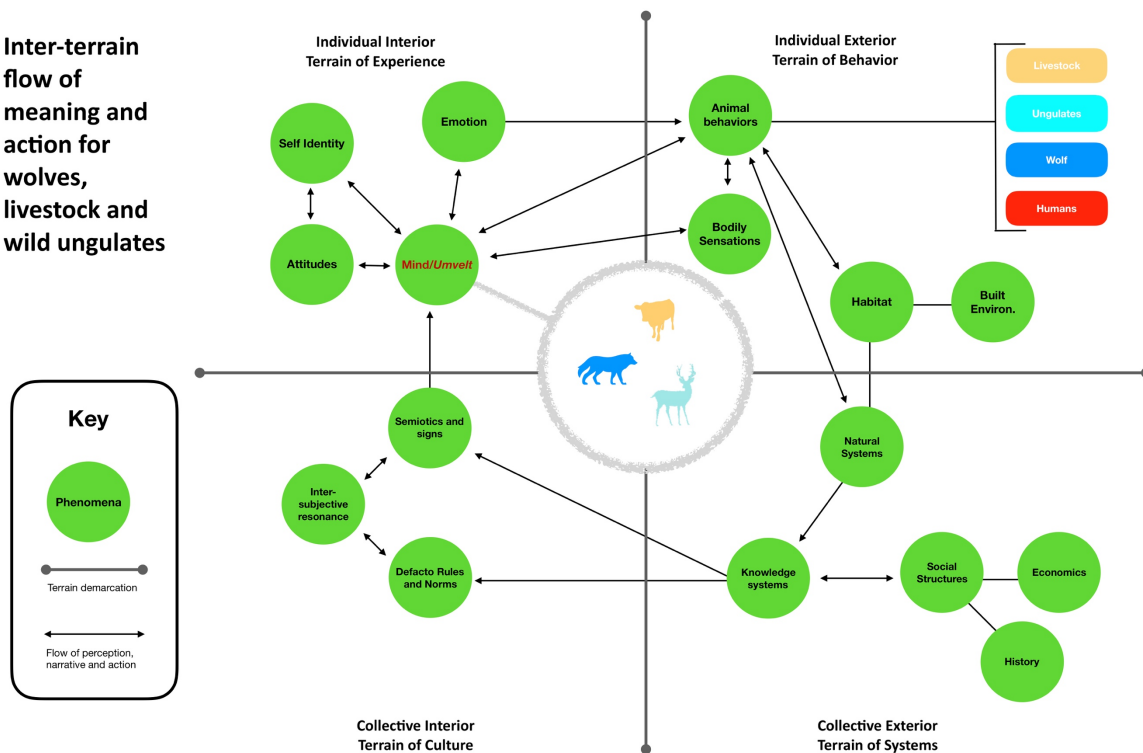
Utilizing the Integral Ecology framework, Mexican wolf reintroduction conflict can be contextualized as a conflict of perceptions between terrains of existence. Different actors (human and non-human) perceive their worlds differently and thus act and respond in ways that are misunderstood or under-understood by other actors. All elements of each terrain are not available to all species. Wolves, for example do not perceive human institutional boundaries, and humans do not perceive the territorial boundaries of wolves (Figures 8.3 and 8.4).

### Inter-terrain flow of meaning and action for humans



*Figure 8.3.* Inter-terrain flow of meaning and action for humans. Phenomena (green circles) in each terrain are interactively linked to others through perception, narrative and action (black arrows), based on known human faculties. Each individual perceiver is a situated knower and also an actor (exercising primary or passive agency). While some meaning is shared, each perceiver will apprehend the same physical environment, semiotics, space of action, history and structures differently.

**Inter-terrain flow of meaning and action for wolves, livestock and wild ungulates**



*Figure 8.4.* Inter-terrain flow of meaning and action for wolves, livestock and wild ungulates  
 All animals are capable of noticing and apprehending, and all animals in this figure perceive at least some phenomena in each of the four perspective terrains. Though perception varies by species and by individual animal, non-human animals are known to apprehend many of the same constructs as humans. Though much remains unknown about perception and process of meaning-making for non-human animals, research supports that they experience emotion, have some degree of self-awareness, and possess judgement of others and of circumstances (terrain of experience); have physical sensations, and respond to environmental phenomena and the behaviors of other animals (terrain of behavior); respond to ecological shifts, share histories, resource management, and exchange knowledge (terrain of systems); and operate in a space of shared meaning within and between species, which is illustrated by familial bonds, territory, range, and generational land use (terrain of culture).

Contributing conflict factors explicitly mentioned or contextually alluded to by the speakers were coded and organized according to the Integral Ecology AQAL framework's four quadrants representing psychological, cultural, behavioral and systemic (or structural) factors. (Figure 8.5)

**Mexican Gray Wolf Recovery Conflict Factors**  
by code distribution

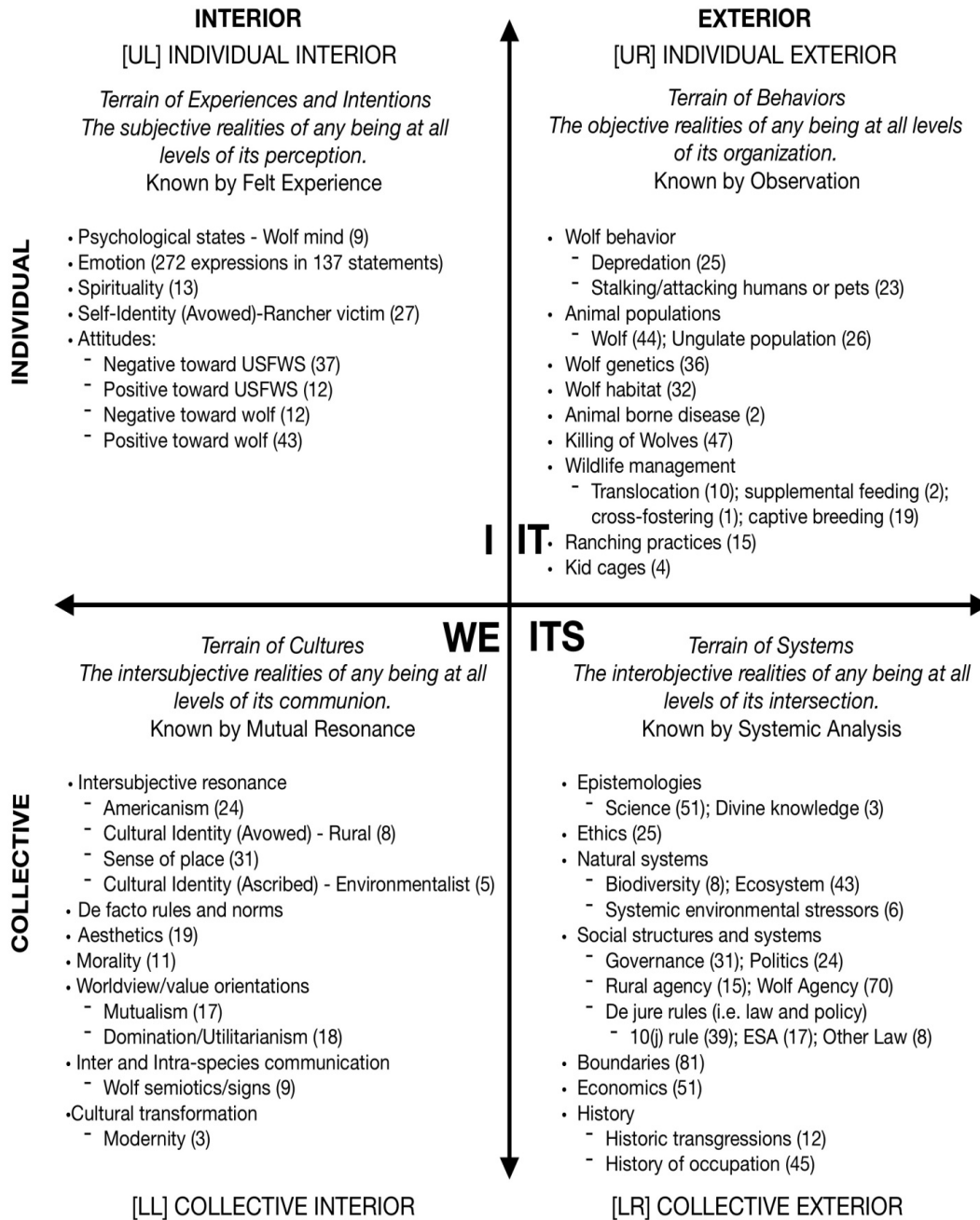


Figure 8.5. Organization of conflict factors according to the Integral Ecology AQAL model, adapted by author from (Esbjörn-Hargens and Zimmerman 2009). For each statement a given factor was coded only one time, regardless of number times mentioned in a single statement. Parenthetical numbers refer to number of code occurrences across all speakers in both hearing locations. Number indicate only occurrence, and may include multiple positions on a given issue/factor.

Phenomena in the terrain of behavior (upper right quadrant) and the terrain of systems (lower right quadrant) can be empirically observed or known through systemic analysis, respectively. Most action and analysis of Mexican wolf recovery and its associated conflicts and challenges happens in these two perspective terrains, and most solution options are developed and applied in these terrains. However, the distribution of conflict factors illustrated in figure 8.5 reveals that individual (subjective) interior and collective (intersubjective) cultural interior factors heavily influence the Mexican wolf recovery. Interior access is not as straightforward as exterior access, as only fractions of the experiential and cultural interiors are presented or articulated on the “surface” (Hall 1959; Freud 2015 org. 1923).<sup>219</sup> However, interior states are inferred by language and emotion as illustrated in Figure 8.3. While the numbers on figure 8.5 do not infer the influence of interior perspectives at the Population level (as sampling was not random), they provide an indication of the general depth or importance of these factors to particular stakeholder groups in Mexican wolf recovery. The following sections detail analysis on conflict factors. References to specific statements are followed by a bracketed ID number which corresponds to a table of exemplary statements provided in Appendix E.

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<sup>219</sup> In 1899, Sigmund Freud began developing the topographical concept of the mind in which the conscious mind is accessible on the surface, but below the surface are the progressively deeper and more substantial subconscious and unconscious levels of the mind, which influence the conscious mind. Freud, S. 2015 org. 1923. *The Ego and the Id*. Online: Sigmundfreud.net. Similarly, Edward Hall, in 1976, developed a topographical concept of culture and illustrated it using an iceberg as a model; the tip of the iceberg visible above the water line corresponds to behavior and observable aspects of culture, and the partially submerged and fully submerged (and progressively larger) parts of the iceberg below the water line correspond to tacit aspects of culture that are subjectively known, implicitly learned, mediated in the unconscious, and difficult to change Hall, E. 1959. *The Silent Language*. Garden City, NY: Doubleday & Company Inc.

## 8.9 Terrain of Behaviors

The most significant issue in the terrain of behaviors was killing of Mexican wolves. Current take by FWS and proposed relaxing of wolf killing rules, in particular killing of wolves caught in the act of killing livestock or a domestic dog, was challenged by 40 speakers, including 2 in the agricultural LG. [PT127; TC055]. Closely related, was the issue of translocation of wolves that stray out of boundaries or have preyed on livestock, with 9 speakers advocating to let wolves be, and 1 rancher supporting increased translocation or killing of wolves that stray out of bounds.

Wolf behavior (depredation on livestock and wolf attacks on humans and pets) was brought forward in 29 statements. Livestock depredation was mentioned by 25 speakers, with 15 speakers voicing concern over it and 10 dismissing it's significance. Wolf attacks on humans and pets were a concern for 17 speakers (mostly in the agriculture LG and all in the rural RWB) but were dismissed by 6 individuals [TC022]. The need for cages to protect children were specifically mentioned by 4 speakers, all residing in or near the BRWRA [PT123; PT125; PT133; PT137; TC135]. Concern over livestock depredation predictably came near exclusively from the agricultural LG.

Other notable factors were wolf and ungulate populations, wolf genetics, wolf habitat, wolf management and ranching practices. Wolf impact on ungulate populations was voice by just 7 speakers, while 19 speakers addressed the benefit that wolves have on ungulate populations [PT145; TC147]. Mexican wolf population was a much greater concern for speakers overall, with 32 pushing FWS to increase the population targets and 12 arguing for lower numbers of wolves. Increasing genetic diversity within the wild wolf population was a concern of 31 speakers (in all LGs), with just 5 speakers contesting

the genetic purity of the founder wolves. Concern over wolf habitat was mentioned by 32 speakers [TC025]. Captive breeding concerns were associated with the high number of wolves in captivity awaiting release, FWS delay in releasing well bonded wolf pairs, the low survival rate of released wolves, and sustainability of the captive breeding program [PT025; PT127]. Rancher accountability was brought up by 15 speakers, including 2 in the agriculture LG; arguing ranchers need to remove carcasses of livestock that die from non-wolf related causes, and calling for ranchers to be accountable for their own risks [PT026].

#### 8.10 Terrain of Systems

Scientific knowledge was a significant issue in all LGs except recreation, with 51 speakers raising the issue. Most critique in this area was leveled at FWS for failure to apply the best available science and practices to recovery of Mexican wolves [TC103]. However, 10 speakers (all but 1 in a rural RWB) expressed suspicion of science, or critiqued FWS for distorting facts, cherry picking data, ignoring social science data on community impacts of wolves, hiding information, and outright lying [TC028].

Ethical imperative was stated by 25 speakers, 20 who argued the imperative to protect Mexican wolves based on righting the historic wrong of hunting them into extinction, the obligation to protect wolves and the environment for future generations, and a religious duty to protect a creation of God. These statements came from all LG, including agriculture [PT013]. The remaining 5, all agricultural LG, stated the imperative to protect humans from predators or to protect the agricultural industry because of its service to America [TC028; TC164].

There were significant references to natural systems. Ecosystems were specifically mentioned in 43 statements (in all LG), which mostly focused on the wolf's functional role and frequently invoked the concept of natural balance [TC004]. Concerns were also expressed over biodiversity, water scarcity, wolf prey scarcity, fire, and non-wolf predator pressures.

Social structures and systems were brought up 177 times in the context of governance, politics, agency and institutions. Speakers were broadly concerned with FWS's lack of engagement with local communities and other cooperating agencies, as well as poor distribution of information, short meeting notice, and limited time to review and comment on the proposed rule [TC118; PT123]. Numerous speakers were disgruntled over FWS's refusal to consider an alternative recovery plan proposed by AZDGF and a number of regional livestock and outfitting organizations [TC017]. Speakers from all LGs critiqued FWS for bad governance and specifically for being swayed by politics or special interest groups [TC021; PT025; PT034].

Issues of power were brought up by speakers in all LGs. Speakers from agriculture and government LGs (15) voiced concern (often emotionally) about rural people being ignored, overridden, excluded from engagement, misrepresented, or misled by FWS [TC017; TC135; TC121; PT142]. Comments concerning the agency of the wolf were more numerous (70) and were mostly focused on wolves' restricted agency; to range naturally, to bond and build family packs, and to make unencumbered choices [PT052]. However, 10 speakers from rural RWBs warned of wolves' ability to transgress material and urban boundaries, persistently outsmart deterrents, kill in coordinated ways, and cunningly plan attacks according to human routines. One speaker said wolves

actually wait for the school bus [PT123]. Passive agency of wolves to effect trophic cascades or otherwise regulate the environment was alluded to in 27 statements.

Institutions were addressed with an emphasis on the ESA. Comments mostly urged FWS to follow ESA mandates. However, there were also statements alluding to attempts to destroy or dilute the ESA, and statements calling out destruction that the ESA has brought onto rural communities [PT013; TC135]. In addition to comments on the ESA, there was significant contention over the 10(j) rule, with 39 speakers addressing the rule. Most of these comments were demands to remove the rule and instate full ESA protections for Mexican wolves. However, a few speakers from the agricultural LG advocated for increased flexibility on killing wolves under the rule or disbanding the recovery effort on the basis of Mexican wolves being non-essential.

The proposed expansion of the recovery area predictably elicited comments (81 occurrences) on boundaries. With exception of 5 comments explicitly expressing concern over expanding wolves into areas with limited water or prey, all comments opposed use of political boundaries to designate the recovery area [PT025; PT026; PT034; PT151]. Expansion to the Mexico border was mentioned by 9 speakers, with 7 emphasizing the importance of expanding boundaries to promote transnational conservation, and 2 speakers arguing the U.S. should leave the entire conservation effort to Mexico and cease conservation efforts in the U.S.

Economic concerns were expressed by 51 speakers. Most of these comments came from the agricultural LG and focused on negative impacts to ranching and other local businesses, but 10 speakers urged FWS to consider the economic benefit of wolf-



related tourism and jobs created through conservation [TC017; TC165]. Recovery program funding was a concern 13 speakers.

Finally, history was an important social factor to speakers, with 38 speakers representing all LGs qualifying their statements with remarks about their personal history in the region, in the recovery effort, in the agricultural industry, or in service to the states or to the country. In addition, several speakers advocated for the primacy of the wolf [TC126].

### 8.11 Terrain of Culture

The perspective of the terrain of culture is revealed in social and cultural narrative, language, signs, symbols, and practices. Rural culture was invoked in addressing public misunderstanding of ranchers and threats to traditional uses of lands, but also the importance of wolves as part of the rural landscape. *Defacto* rules and norms relating to rural culture were specifically referenced, particularly related to privacy and private property rights [TC028; TC164; TC171]. Environmentalist identity was addressed in 5 statements, but unlike rural identity which in all occurrences were avowed by RWB speakers, the environmentalist identity was ascribed by those in agricultural LG. Agricultural speaker statements leveled critique at environmentalists for demonizing resource extractive industries or being detached from the local impacts of wolves and what it means to live close to the land [PT014; PT053]. Americanism was also strong cultural reference. Statements by speakers in the agricultural LG were rights and tradition focused, while statements by others highlighted heritage of public lands or made patriotic references to military service or to historic American events [PT127].

Related to wolf agency; semiotics, signals, and the culture of wolves were mentioned in 9 statements about wolf ability or inability to make sense of boundaries, wolf deterrents, and other aspects of the environment [PT026; PT151].

Sense of place emerged in 31 statements across all stakeholder groups. Place was grounded in descriptions of time spent in the region, livelihood, recreation activities, and regional family history. Aesthetic appeals (many in the context of place) were made by 19 speakers, mostly in the unknown LG. Most of these statements were descriptive, and several were poetic and evocative [TC039; TC103].

While this analysis does not pretend to summarize value orientations of individual speakers, there were 18 statements that clearly indicated a utilitarian orientation and 17 that clearly indicated a mutualist orientation. Domination statements were from speakers in all LGs except conservation and government, and most were from speakers in or near the BRWRA or in the area wolves would likely inhabit with the proposed expansion. Most mutualist statements came from speakers of unknown or rural RWBs [PT133; PT137; PT046; TC047].

## 8.12 Terrain of Experience

Perhaps the least accessible perspective is that of individual experience. This is the terrain of the attitudes, spirituality, self-identity, mind, and emotion. Attitudes toward wolves were coded independent of issue position. There were 9 negative attitudes toward wolves expressed (4 in agriculture, 1 in recreation, and 4 in unknown LGs) and 38 positive attitudes toward wolves expressed by speakers in conservation, other, and unknown LGs. Negative attitudes centered around the way wolves kill and assertions of

lack of purity [PT 053; PT163; TC017, TC126; TC135; TC149]. One stakeholder likened wolves to sexual predators [TC168]. Positive attitudes centered around the beauty and iconic appeal of wolves, their functional role in ecosystems, and their social dynamics [PT039; TC025].

Negativity towards FWS was broadly expressed (37 expressions across all LGs) centering around poor management practices, failure to use the best available science, catering to special interest groups, lack of transparency, corruption, and betrayal [TC025; TC037; TC039; TC118].

Two avowed identities were expressed: 1.) A victim identity (28 speakers mostly agriculture LG and all rural RWB) [TC021; TC028; TC116], and 2.) A spiritual connection to wolves (13 speakers, including 1 in the agricultural LG [TC004; TC146]. Emotion, a notable conflict driver, in the terrain of experience, was independently analyzed.

### 8.13 Emotion in Speaker Statements

All speaker statements were coded for emotion in a multi-step process (Appendix A and B). Statements were coded for emotion words utilizing the NRC Word-Emotion Association Lexicon (EmoLex), a database of emotion words and their corresponding emotions, according to Plutchik's (1980) theory of emotions (Mohammad 2016). This generated 718 emotion words, which were then reviewed against the EmoLex and coded to their corresponding emotions. A second coding of all statements was done for emotion

words used in context and to capture the non-explicit expression of emotion.<sup>220</sup>

Statements were then coded at the document (full statement) level for 1.) Presence of emotion, and 2.) specific emotions expressed. Finally, emotions mapped according to Plutchik's wheel of emotions (Plutchik 1980) (Figure 8.6).

Emotion was present in 137 of the 149 speaker statements, comprising 269 expressions of 24 different emotions (Appendix F).<sup>221</sup> With exception of surprise, all basic emotions were represented. Four emotions present (admiration, vigilance, apprehension and annoyance) are higher or lesser intensities of basic emotions. All primary dyadic emotions but one were present. While surprise was not present, both awe and alarm were present; awe being a primary dyad of fear and surprise, and alarm being a higher intensity of the same dyad.<sup>222</sup> There were 2 secondary dyads, and 3 tertiary dyads represented.

While all primary emotions were present, they were not the most dominant. Dominant emotions were mixes of fear, anger, disgust, anticipation, and surprise. Contempt was expressed in 30.87 percent of statements; by far the highest frequency emotion, and it was expressed across all LGs regardless of RWB. While there was some contempt expressed for wolves (11), environmentalists (4) and ranchers (3), most of contempt was for FWS. Anxiety and outrage were the next most frequent emotions.

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<sup>220</sup> In this pass, emotion words not used in an emotion context were eliminated from the coding. For example, a statement such as "I love pizza" would be eliminated in this study.

<sup>221</sup> Many statements reflected multiple emotions and were coded for all identified emotions. Each emotion was coded only one time per statement.

<sup>222</sup> I would classify awe as a mix of surprise and joy, but Plutchik categorizes awe as a mix of surprise and fear. For consistency, I have adhered to Plutchik's categorization. In other depictions of Plutchik's emotion wheel, alarm is a higher intensity of the fear-surprise dyad.

While fear also ranked high in frequency, most expressions of fear were from speakers reporting the presence of fear in others rather than expressing their own fear. Expressions of fear were either at the lesser degree of apprehension or compounded with other emotions.

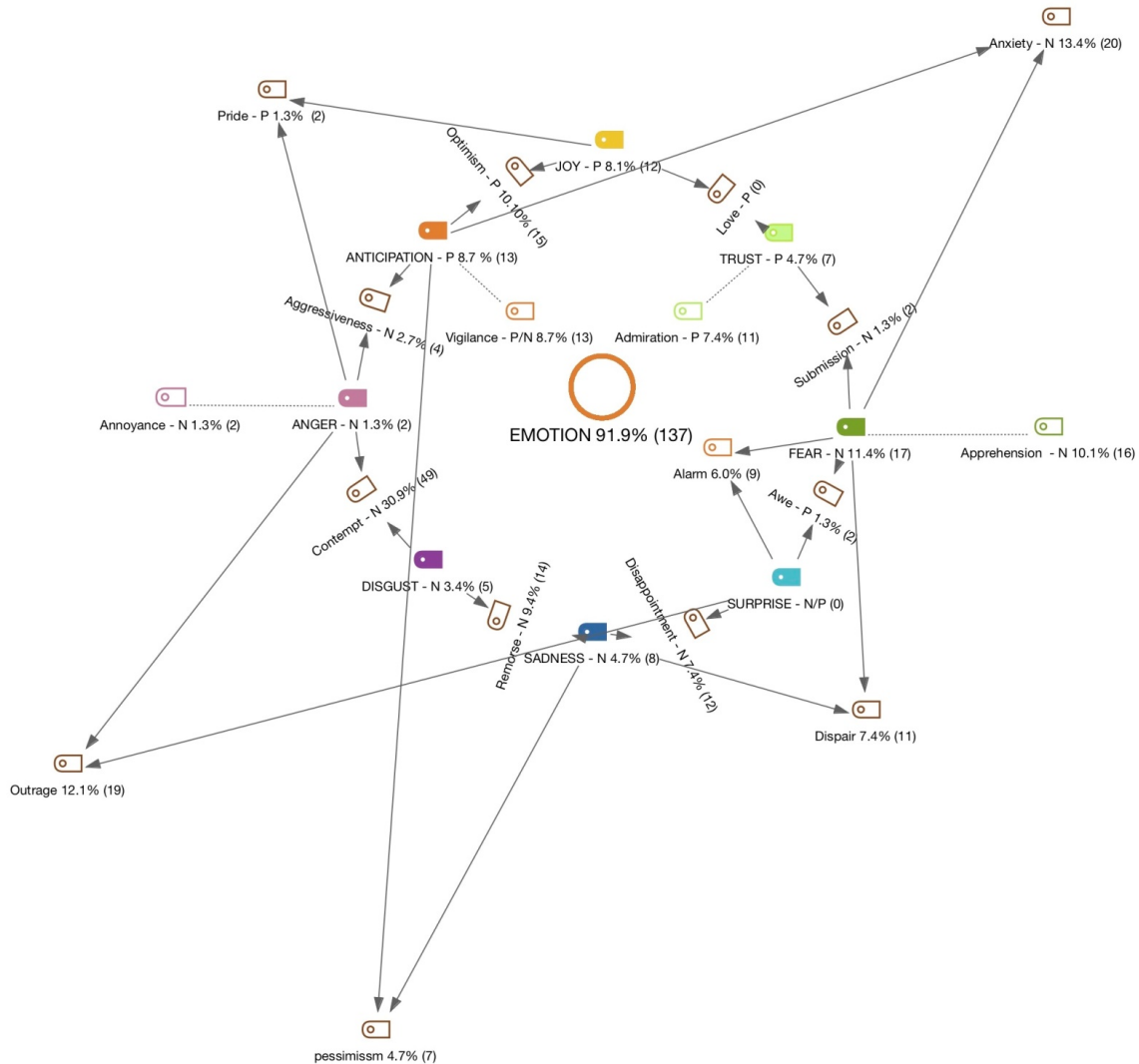


Figure 8.6. Emotional expression in Mexican wolf recovery public meeting statements. Emotions are displayed according to Plutchik's wheel of emotion (Plutchik 1980). Percentages represent percentage of emotional expression across the entire sample of 149 statements.

Contempt is a primary dyadic emotion (a blend of anger and disgust). It is a feeling that a person or thing is worthless or deserving of scorn. Outrage is a tertiary dyadic emotion (a blend of surprise and anger), and is a strong reaction of indignation, shock, and disapproval. Anxiety, also a tertiary dyadic emotion, is a blend of anticipation and fear, and is a feeling of worry, nervousness, or unease over uncertainty of a future event or outcome. Contempt and outrage are negative moral emotions that require cognitive appraisal of behavior and judgement against an object (such as a person or organization) for a moral or standard failing (Ortony, Clore and Collins 1988; Simpson et al. 2006), and are highly mediated by narrative.

Moral emotions are complex because they are compound, and are cognitively linked to specific events, agents and objects in an individual's perceptual world, against which behaviors are appraised (Ortony et al. 1988). Contempt arises from a perceived failure of the object to meet an interpersonal standard (Bell 2009). Outrage arises from perceived violation or transgression of cultural or social norms (Darley and Pittman 2003). Contempt and outrage are often expressed in response to societal injustice and are appraisal producing, whereas anger is an appraisal evoking emotion, often in response to a personal harm, or it is an empathetic response to harm done to another being (Batson, Chao and Givens 2009). Some theorists have situated negative emotions such as outrage and contempt as drivers of positive social change arguing that negative emotions gain moral and political ground because they acknowledge and appraise injustice (McFall 1991), express a correct moral perception, and can motivate people to restore a sense of fairness or rightness in society (Lourde 1984; McFall 1991; Darley and Pittman 2003; Haidt 2003).

Anxiety and outrage are both tertiary dyads (anxiety a blend of anticipation and fear; outrage a blend of surprise and anger). Tertiary dyads are seldom-felt emotions, and the high frequencies of anxiety and outrage at the hearings is indicative of speakers at emotional extremities. Many speakers expressed having waited too long for particular action, having been ignored for many years, or having promises made and broken over a long period of time, suggesting that earlier in the recovery effort these emotions may not have been so extreme. Inaction or the perceived wrong actions by FWS over a long time has generated extreme emotions.

A code relations analysis revealed contempt and outreach as strongly linked to scientific knowledge, historic transgressions, wolf management, rancher victim identity, politics, and law (ESA and the 10(j) rule) [PT013; PT123; PT025; TC019; TC045]. Outrage was also linked to killing of Mexican wolves and kid cages. Contempt was also directed toward ranchers [PT046] or supporters of recovery [PT121] in several statements. Anxiety was linked to economics, wolf attacks on humans and pets, killing of wolves, wolf population, and non-wolf related environmental pressures. Uncertainties related to these factors were a principal concern of speakers across all LGs [PT035; PT053; PT139; PT144; TC152].

There was no love at the Mexican wolf hearings. While other positive emotions including joy, anticipation, admiration, trust, and optimism were expressed, love (a dyad of basic emotions joy and trust), was the only primary level emotion not represented. A code relations analysis shows positive emotions to be most strongly linked to ecosystems, wolf mind, spirituality, wolf behavior (including ecosystem functionality) and aesthetics, often contextualized in terms of hopes or ideals. Aside from a limited number of

appreciative comments toward FWS, statements toward FWS were overwhelmingly negative in terms of emotion. Other notable negative emotions present were vigilance, disappointment, despair, and remorse linked to depredation, wolf attacks on humans and pets, historic transgressions against wolves, ethical imperative to protect wolves, and concern over wolf killing and genetic diversity.

#### 8.14 Metaphor in Speaker Statements

Like emotion, metaphor was revealing of individual and collective interior perspectives. Statements were coded for metaphor according to a codebook (Appendix A). The analysis supports theories that metaphors are fundamental to the human thought process (Lakoff and Johnson 1980), that they are used to make sense of complicated phenomena (Lakoff and Johnson 1980), they transfer complex meanings and embodied knowledge from one domain to another (Baldwin et al. 2017), they create continuity of experience (Landau et al. 2014), they represent core concepts of the self (Landau et al. 2011; Schlegel et al. 2012), and they are used to mediate uncertainty (Baldwin et al. 2017), difficult to discuss topics, and emotional states (Agus 2013; Lakoff 2016).

Metaphor usage was ubiquitous in speaker statements, reflecting that indeed, metaphors *are* lived by (Lakoff and Johnson 1980). Nearly all statements contained metaphor usage: across all 149 statements there were 413 instances of conceptual metaphor use, including 23 instances of combined metaphors (i.e. more than one metaphor used in a single sentence). Metaphor was used to communicate factors in four AQAL quadrants. Table 8.1 details dominant use of metaphor according to perspective



terrain.<sup>223</sup> The significant use of metaphor across all LGs and all RWBs indicates a need or desire of speakers to grasp and organize factors that are difficult to define, emotionally laden, or uncomfortable to talk about.

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<sup>223</sup> There were 38 uses of entity and substance metaphors, which transfer qualities of a body (frequently the human body) to a subject that may be unbounded, undefined or immeasurable, such that abstract events, activities, emotions and ideas become tangible and are able to be organized and categorized. Lakoff, G. & M. Johnson. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press. Entity and substance metaphors in the statements were associated with witnessing history and illustrating intimacy or primacy [PT133; TC028]. There were 65 uses of orientational metaphors (metaphors of location or direction) used by speakers to describe the recovery process, the reach of the law, sense of place, degree of commitment and to illustrate issue position [TC053]. There were 102 uses of process metaphors (metaphors of performance, sports or labor, collaboration, coping, and mechanical processes), 33 uses of movement metaphors (metaphors of travel, journey, and passage of time) and there were 14 uses of structure metaphors (metaphors of foundation, frameworks, or building). Most process and movement metaphors were used in reference to the recovery planning and most structure metaphors were used in the context of security or uncertainty.

Terrain	Metaphor to Describe	f	Exemplary Statement
<b>Behavior</b>	Wolf behavior	26	<i>"So we are to understand that it is okay and an acceptable price to pay that people are being maimed, mauled and killed as a result of your efforts and our government turning wolves loose on us? [TC126]"</i> .
	Killing of wolves	16	<i>"Allowing anyone to kill a wolf going after a staked-out pound puppy only serves to tempt the honest majority and rewards the worst in human behavior [PT127]"</i> .
	Wildlife management	127	<i>"They deserve better than to pull pups from their mothers to give them a chance in the wild only to see them used for target practice by an agent supposedly shooting coyotes [PT127]"</i> .
<b>Systems</b>	Governance, politics & law	111	<i>"The Mexican Wolf Recovery has been infected with politics from the beginning [PT147]"</i> .
	Law	7	<i>"...then, you know, there was my father. He was German, German-American, but he fought against the Nazis, who came up with ideas like 'essential' and 'nonessential' [PT047]"</i> .
	Knowledge	9	<i>"You guys are dumb talking on everything, and that's a wrong thing to do [PT123]"</i> .
	Economics, value	20	<i>"If somebody's taken \$1,200 to \$3,000 out of your bank account 20 or 30 times a year, tell me that's insignificant [TC045]"</i> .
	Boundaries	15	<i>"Unlike the pro-wolf people, we have lived in the middle of the wolf recovery program [PT053]"</i> .
	Natural systems	35	<i>"Like creek water rushing over a waterfall, the benefits of the return of an apex carnivore cascade through an ecosystem [TC019]"</i> .
	Agency	32	<i>"I make the aspen and they will flourish. I make the grasses grow tall and currents run strong. I even make rivers change their course. I am lobo, and I am essential [PT029]"</i> .
<b>Culture</b>	Belonging	22	<i>"In my estimation, there's very few places for the wolf on this earth. Let's say perhaps Alaska, Canada, a zoo or two, Grimm's Fairy Tales, or hanging on the wall [TC171]"</i> .
<b>Experience</b>	Spirituality	8	<i>"..now that the future is upon you, come down upon you like fire from heaven, let it not be that the children of men, the commandment breakers, shall wander these bleak and lifeless hills, hungry and alone, and whisper mournfully amongst themselves, 'the lords of nature, the wolves, once lived here [PT029]"</i> .
	Identity	5	<i>"Some of you may be able to shop at Whole Foods for your organic, unicorn safe, pixie-dust sprinkled vegan groceries, but most of us just eat meat, eggs, dairy products, and veggies that we either raised ourselves or went and bought at our local grocery stores, because that's what we can afford [PT014]"</i> .
	Wolf mind nature	23	<i>"Where is the science studying why New Mexican wolves will so quickly drink with the ranchers' dogs and the resident coyotes? [TC118]"</i> .

Table 8.1. Dominant metaphor use by perspective terrain.

## 8.15 Narrative in Speaker Statements

Analysis of emotion and metaphor was revealing of social and cultural narrative influencing Mexican wolf conservation. Prominent narratives invoked in speaker statements were 1.) Two power narratives: Government as malfunctioning and government as corrupt; 2.) Two human identity narratives: Environmentalists as disconnected, and ranchers or farmers as heroic victims; 3.) Three related wolf identity narratives: Wolf as villain, wolf as hero, and wolf as victim; and 4.) Two Nature narratives: Nature as balanced, and human as separate from Nature.<sup>224</sup> There is arguably some empirical evidence supporting each of these narratives. However, as is often the case with narrative, these social constructions have become *foundations* of truth rather than *illustrations* of truth in Mexican wolf recovery.

### 8.15.1 Government Narratives

Numerous speakers across LGs and RWBs expressed contempt and outrage toward FWS with a high use of metaphor invoking two narratives about the government. The first was the narrative of the government as malfunctioning or weak. This narrative reflects a judgement of the government as incapable or inefficient. It is a narrative of a government with no strong conviction or integrity that is easily manipulated by special interest groups. This narrative was invoked by speakers both pro- and opposed to Mexican wolf recovery [PT013, PT127; TC025; TC028].

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<sup>224</sup> Narratives of the wolf as a relative or spiritual guide also emerged in speaker statements, but these were made only by a few speakers, whereas the other wolf identities were broadly referenced.

A related, but distinctly different narrative was one of government corruption. This narrative was contextualized in terms of government overreach, lawlessness, manipulation, and misrepresentation. While the statements in this case study were made in 2014, they are indicative of a brewing American political narrative that was instrumental in President Trump's election two years later (Transparency International 2017). While the government was still portrayed negatively, the government of this narrative is powerful and capable, but misuses its power. This narrative drives a social movement for state's rights and limited government and has been influential in numerous uprisings including those of ranchers such as Cliven Bundy. This narrative was espoused at the hearings by ranchers and a few other rural stakeholders, and it positioned the federal government as a threat to rural life and the foundation of the country [PT123; TC149; TC171].<sup>225</sup>

#### 8.15.2 Human Identity Narratives

Two influential identity-based narratives emerged: The disconnected from reality environmentalist, and the victimized hardworking American rancher/farmer. The disconnected environmentalist narrative conceived wolf recovery advocates as alienated from their food source and by extension alienated from the land and resources they aim to protect. This narrative works to diminish public concern for the environment by

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<sup>225</sup> Despite Trump's campaign promises to root out corruption, the Trump Administration has not escaped scrutiny, as the belief that corruption in the White House is pervasive rose 36% between 2016 and 2017, according to a 2017 study, with the presidential office viewed as most corrupt. Transparency International. 2017. Corruption in the USA: The difference a year makes. Berlin: Transparency International. In this case the narrative is similar, but the public carrying the narrative has broadened or shifted from rural populations to the population *writ large*.

constructing environmentalists as out of touch with the environment (thus their grievances are exaggerated or misplaced). This narrative emerged in statements as an ascribed identity imposed by rurally based speakers on those who are pro-wolf recovery and was primarily directed at non-local recovery proponents [PT014; PT133; PT145; TC135; TC171]. The narrative was also addressed by recovery advocates as a rebuttal to the ascribed identity [PT038].

The hardworking rancher/farmer narrative contextualizes the livestock industry as a pillar of American society and conceives farmers and ranchers as stewards of the land and providers for the American public. This narrative operates to defend the livestock industry (and associated rights to land and land use), and to position wolf recovery as a threat to American security. This narrative positions rural communities, and specifically ranchers, as victims of the government, victims of the wolf, and underappreciated or misunderstood victims of an urbanizing society [PT145; TC017; TC021; TC118].<sup>226</sup> In contrast to the aforementioned ascribed environmentalist identity, this victim narrative was avowed, mostly by rurally based speakers in the agricultural LG.

### 8.15.3 Wolf Identity narratives

“People like to romanticize the wolf, you know, say they live in really close family groups; they only hunt the weak, sick, old and young; and that they serve as overseers of the whole ecosystem... People like to view wolves as supreme

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<sup>226</sup> There are counter narratives of ranchers and farmers as welfare burdens or opportunists, but these narratives were not invoked in the statements in this case study.

spiritual beings or as demonic killers that kill for sport and surplus. Really, it's somewhere in the middle.”

- Maggie Dwire, FWS Mexican Wolf Recovery coordinator (Paskus 2013).

As discussed at length in Chapter Five, wolves have a long and troubled narrative history. Despite material evidence to the contrary, speaker statements make it clear that the villainous wolf of story is effectively terrorizing the rural Southwest [PT053; PT123; PT163; TC116; TC135]. Several statements explicitly referenced fairy tales, while others remarked on the wolf's fabled nature such as waiting school children and killing for fun. One particularly evocative statement illustrated the fiendish qualities of the wolf in a narrative retelling rivaling that of Brother's Grimm:

“...And then one of the things that I'd like to say before I give up here, my mom just told me about an incident down in Texas. Getting to be 101 here pretty quick. And she said that down here, there was a family that had three kids, and two big ones and a little kid went out there and they buried the little baby in the leaves, and a big wolf showed up there and the kids run, all of them, the big ones, up the hill. The mama says they run to the house. And so, Where's the baby? He's buried out there in the leaves. Well, there's a big wolf went over there and looked at them. He went up on the hill and howled, and so mama ran out there and grabbed the kid and run back to the house, and the wolf got out there and a big old pack

showed up there, and there wasn't any kid to eat, so they killed the wolf that called them in and ate him [TC156]”.<sup>227</sup>

Paralleling the deceptive wolf of biblical narrative, wolves have been positioned as proxy for the federal government (American Principles Institute 2019). The wolf in sheep's clothing has become a wolf in government uniform. Some speaker comments positioned Mexican wolves as a tool or weapon of the federal government [TC126]. Thus, this wolf identity narrative is enmeshed in the political corruption.

Numerous statements positioned the wolf as a victim, referencing their eradication and the current struggle, or their fact that they are misunderstood, and the wolf as functional hero narrative was mentioned in 43 statements, 14 which explicitly mentioned Monboit's film, trophic cascades, or the Yellowstone example.<sup>228</sup> This narrative was specifically invoked by speakers arguing for essential status of Mexican wolves based on their value to the ecosystem.

#### 8.15.4 Narratives on the nature of Nature

Twenty nine percent of speakers made explicit references to the balance of nature, balance of life, or balance of the ecosystem [TC025; TC032]. The persistent western narrative that humans are separate from nature has perpetuated the myth of the balanced nature, and it continues to fuel the notion that humans and non-human animals belong in

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<sup>227</sup> Interestingly, a Google search of “wolf attack Texas 2014” yielded no reports verifying this incident, but it did reveal numerous reverences to stories about lone wolf attacks in Texas, referring to human vigilante terrorists.

<sup>228</sup> George Monbiot's 4.5 minute film *How Wolves Change Rivers*, released in early 2014, just months before the hearings took place.

separate domains and that a choice needs to be made between human and wolf existence [TC126; TC149; TC168; TC171]. Constructions of civilization as a place where animals intrude and the wild as a place where humans intrude complicates Mexican wolf recovery which occurs on public lands; lands shared by humans and other animals. The town of Reserve, the Catron County seat and business center of residents in the BRWRA has a population of just 289 people, but speakers in the BRWRA LG made comments regarding the area as highly populated. Many residents in the BRWRA have generational roots in the region and have lived their lives adjacent to the wildest place in the Southwest, yet speakers from the BRWRA expressed fear of the wolves invading civilization or of wolves preventing them from going into the woods to hike or otherwise enjoy nature. Narratives of the “wildness” of wilderness can generate perceptions of barrenness, loneliness, desertion or even terror (Cronon 1995a). Wilderness narratives are attached to the wild species that reside there and vice versa. The “human-separate-from-nature” narrative positions the hapless Mexican wolf as both an enforcer of the wild boundary and a transgressor of the civilization boundary; forcing humans to live in cages while wolves roam free.

#### 8.16 Discussion and Themes

Emotion and factor coding were reviewed against the use of metaphor and the presence of social, cultural, and media narrative in statements to identify overarching themes permeating aspects of the recovery program. Six overarching themes were identified: Chaos, battle, security, power, balance, and belonging. These themes were



consistent across all LGs and all RWBs, and they constitute the dominant shared perceptions of the recovery effort.

A general theme of chaos emerged from statements that referenced disruption, ecological destruction, property destruction, wolves out of control, and an unharnessed government. This theme was grounded in sense of place, rural identity, and traditional land use. It was linked to anxiety over expectations about negative future outcomes for wolves and for rural communities. Temporal pressures, often expressed metaphorically, were evident in statements that expressed a focus on the recovery effort moving too fast or too slow or moving in the wrong direction. Contributing factors varied for different LGs and RWBs, but a sense of chaos was attached to negative attitudes toward FWS by all LGs and RWBs, which to a certain extent seemed to beg for government control; the paradoxical antithesis of what many stakeholders were indicating they wanted.

Mexican wolf recovery is broadly perceived as a battle. The theme of battle was revealed significantly in the metaphor analysis, with 104 metaphoric references to war, fights, struggles, weapons, beatings and the like. The battle theme was grounded in *defacto* rules and norms, historic transgressions, self-identity, cultural identity, Americanism, and a utilitarian value orientation. Battle statements were mostly defensive and related to protection of livelihood and safety by the agricultural LG and to protection of the wolf, ecosystems, and science by all LGs including some agriculture, and across all RWBs. The battle theme had the highest number of links to emotion and was primarily marked by expressions of outrage and contempt with some directed toward the wolf, but most directed toward FWS or in the case of agricultural LGs, also to the federal government in general. The theme is tied to negative attitudes toward FWS by all LGs

and RWBs and to the wolf by agricultural LGs and to a lesser extent the rural RWB. The battle theme was linked strongly to themes of chaos, power, security and belonging. It was characterized by statements that positioned the speaker, the speaker's family, other people, wolves or the Earth as victims and positioned the government, the wolf, or organizations as aggressors. Statements include references to attack, invasion, takeover, theft, violation of rights, corruption, disorganization, and mismanagement. Statements portrayed both ranchers and wolves as victims. Battle statements were colored with emotion and many expressed in graphic detail.

The theme of security was closely linked to themes of chaos, battle, power, and balance. It was grounded in rural self and cultural identity, and a value orientation of mutualism. It was strongly linked to wolf behavior, wolf management, wolf genetics, wolf habitat, ecosystems, environmental stressors, ungulate populations, wolf populations, and economics. This theme was dominated by expressions of anxiety, and characterized by statements about fear of wolves, livelihood loss, wolf survival, ungulate population impact, water shortages, and long-term sustainability of ecosystems.

The theme of power was grounded in rancher self and cultural identity, a utilitarian value orientation, and sense of place. It was linked to boundaries, rancher and wolf agency, governance, politics, and law; specifically, the ESA and the 10(j) rule. Expressions of contempt and outrage were strong in this theme and directed toward FWS by all LGs and RWBs and toward the federal government in general by the agricultural LG. This theme was characterized by statements citing suspicion of science and political motivation or government manipulation as problematic drivers.

The balance theme was grounded in a mutualist value orientation, sense of place, and morality, and linked to ecosystems, boundaries, wolf habitat, wolf population, ungulate population, and wolf genetics. The theme was strong across all RWBs and most LGs, but statements from the agriculture LG did not link to this theme. While there were many references to the balance of the ecosystem, these comments were not couched in terms of long-term sustainability. Rather they were more geared toward the idea of making the world “right”. Thus, this theme was also strongly tied to history, and ethical imperative. This theme was characterized by comment about connection to wolves, the natural environment, the wolf’s value, and the wolf’s function in the ecosystem, and was strongly linked to the theme of belonging.

The theme of belonging was attached to sense of place, rural self and cultural identity, Americanism, and traditional land use. It was linked to boundaries, ecosystems, history of occupation, wolf habitat, wolf signs and signals. This theme was strongly present across all LGs, regardless of RWB or issue position, and it manifested in terms of both place and territory. Statements of belonging associated with place were marked by emotive words of beauty or affection, even when bound to a statement of entitlement, and most commonly emerged as references to regional family history, time spent on the land or in the wilderness, and connection to the land. Expressions of territory were characterized by statements about historic occupation, boundaries, and rights to land. Territorial statements also often evoked a sense of *not* belonging and were directed by the agricultural LGs at recovery advocates, the wolf, and government agencies, or were directed by recovery advocates at humans in general, contextualizing them as invaders or intruders in the wild. The theme of belonging was strongly linked to the balance theme as

it often implied connection or place in a greater system, and it was linked to the battle theme in the context of territorial defense.

An examination of these themes in context reveals a common motif of power and control, and an associated sense of loss of control, loss of autonomy, and sense of powerlessness across all stakeholder groups regardless of LG, RWB or position on the recovery effort. This motif implies that conflict over Mexican wolf conservation is less about the actual wolf, and more about human and organizational power dynamics evolving from a long history of transactions and perceived transgressions against humans and wolves.

For humans, conflict factors can be mapped onto the perspective terrains according to stakeholder livelihood group (Figures 8.7a, 8.7b, 8.7c, 8.7d and 8.7e). These figures map the generally shared perspectives of each stakeholder group, but the categories are not mutually exclusive, and not all speakers fit distinctly into one of these maps. A generalized metanarrative for each of these groups is crafted from the analysis.

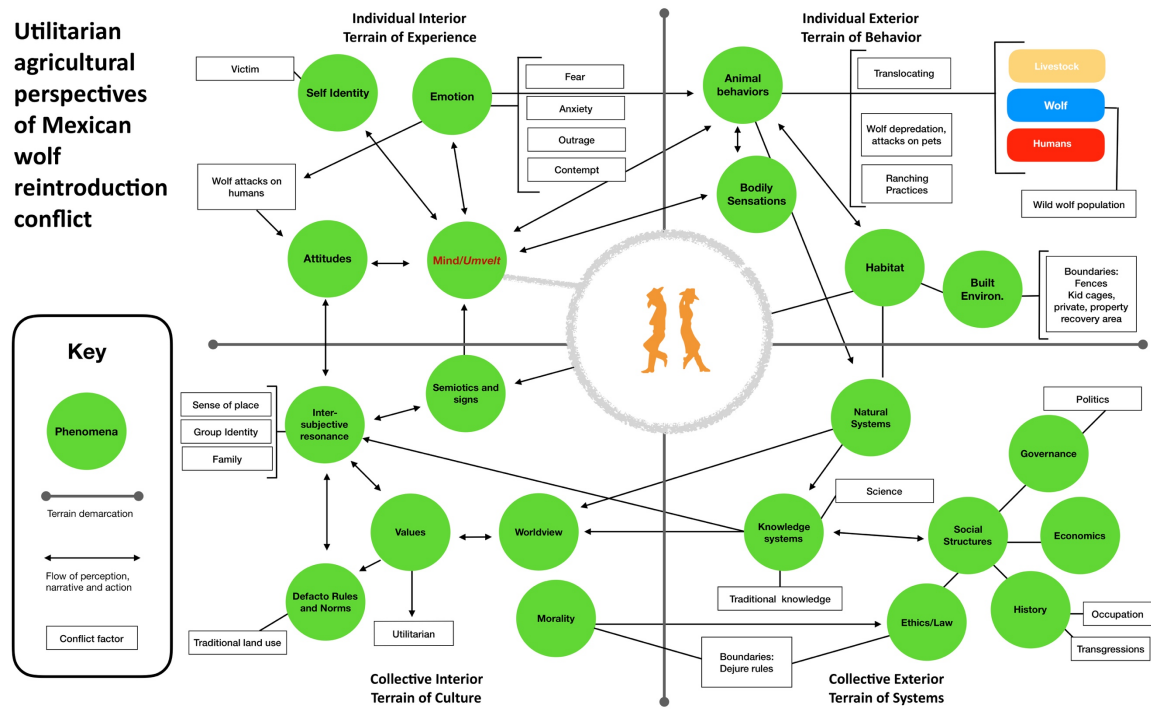
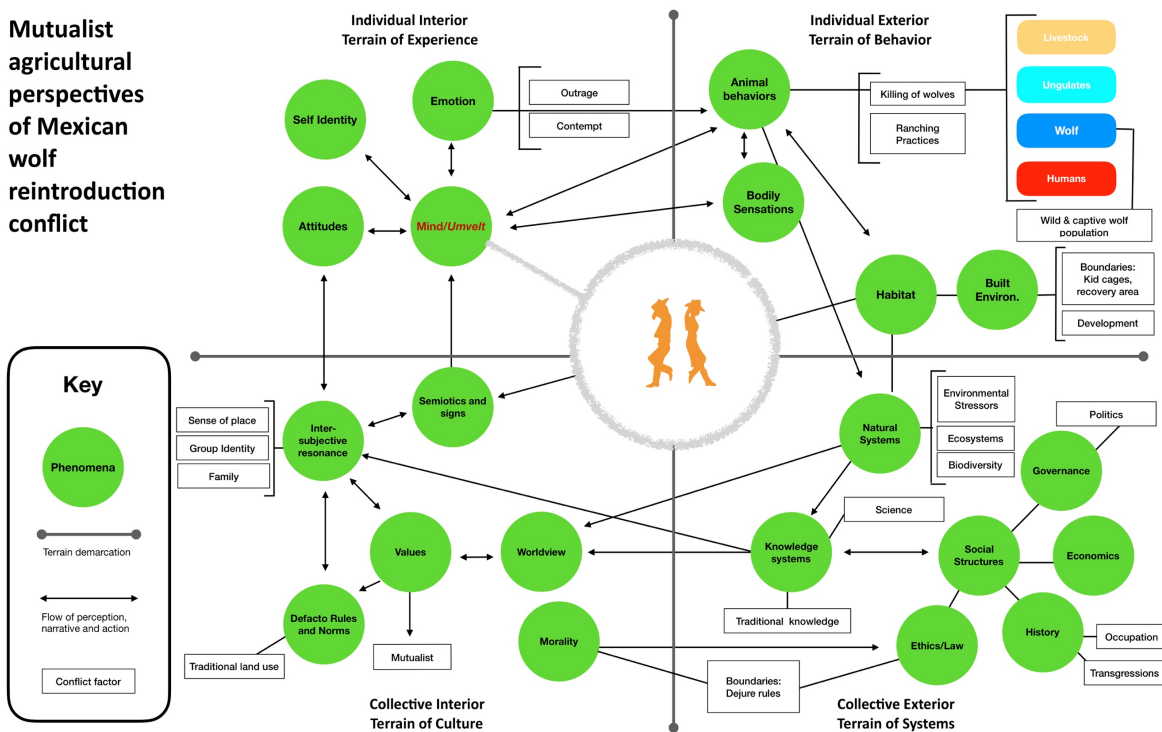


Figure 8.7a. Utilitarian agricultural perspectives of Mexican wolf reintroduction conflict. There was heterogeneity in perspectives from the agricultural livelihood group. A ranching subset of this group, which included individual ranchers as well as livestock organizations, expressed a victim identity, outrage and contempt toward the government over politics, science, government presence, historic transgressions, inciting fear, and refusal to engage ranching communities in recovery planning. This group expressed fear, and to a limited degree, contempt for the wolf. Anxiety in this group was linked to fear of wolves and fear of economic impacts. Impact on wild ungulates was not a concern. This group held a *defacto* norm of controlling the land, paired with a strong expression of rural community sense of place. They held a utilitarian value orientation, and explicitly placed human safety, economic stability, and culture above all else.

The metanarrative for the utilitarian agricultural subgroup is that wolves are criminal in nature and have no purpose. People wanting to protect wolves are disconnected, romantic idealists who don't understand wolves or what it is like to live under the threat of physical and economic destruction by wolves. The government is corrupt and plotting to dispossess ranchers and destroy rural life, but is also dysfunctional and unable to facilitate wolf recovery due to ineptitude. Wolves and the federal government (and by extension FWS) threaten the heart of America.

**Mutualist agricultural perspectives of Mexican wolf reintroduction conflict**



*Figure 8.7b.* Mutualist agricultural perspectives of Mexican wolf reintroduction conflict. Most rural community dwellers and a subset of the ranching community did not perceive themselves as victims, but they expressed outrage and contempt toward FWS over politics and science, and toward the utilitarian agricultural group for villainizing wolves. This group expressed a strong expression of rural community sense of place, but held a mutualist value orientation, and expressed the importance of co-existence based on ethical and environmental imperatives.

The metanarrative for the mutualist agricultural group is that Mexican wolves have a place in the wild and an ecological purpose. Public lands should be shared by people and wildlife. Rural dwellers need to assume the inherent risks of living adjacent to wilderness. Ranchers need to be accountable and assume the inherent risks of grazing livestock on public lands. FWS has allowed itself to become encumbered by politics to the detriment of Mexican wolf recovery and federal agency relationships with rural communities.

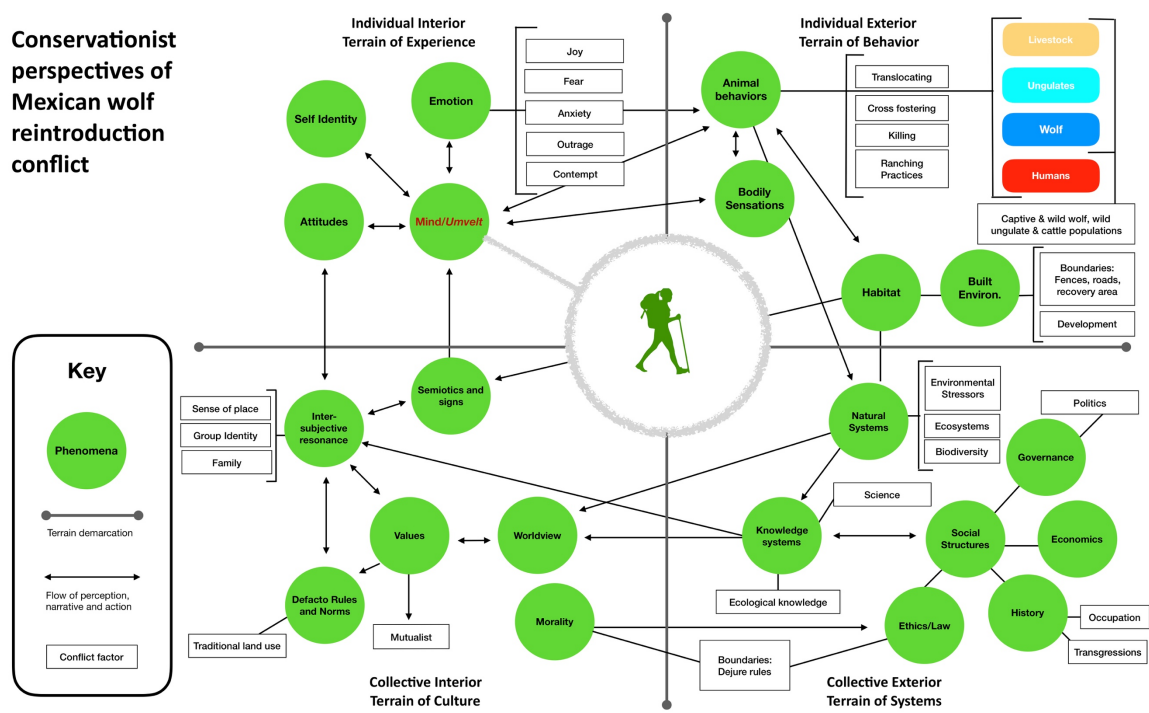


Figure 8.7c. Conservationist perspectives of Mexican wolf reintroduction conflict. While the conservationist group represented rural and urban dwellers, local and out of state, this group was largely uniform in perspectives. They expressed outrage and contempt toward the government over politics, lack of reliance on science, poor management of the recovery program, and endangerment or killing of wolves. They also expressed outrage toward the agricultural group for villainizing wolves and inciting fear. Joy was expressed in this group over the return of Mexican wolves and anxiety and fear over the future of Mexican wolves and the health of the ecosystem. This group expressed a strong connection to the natural environment, and to a lesser degree, a bond with the specific wilderness of the reintroduction area. This group held a strong mutualist value orientation, and expressed the importance of co-existence based on ethical and environmental imperatives.

The metanarrative for the conservation group is that Mexican wolves are essential to culture and ecosystems. Public lands should be shared by people and wildlife, and humans have an obligation to wolves. Rural dwellers need to assume the inherent risks of living adjacent to wilderness. Ranchers are exploiting public lands and already have too many concessions. Ranchers need to be accountable and assume the inherent risks of

grazing livestock on public lands. FWS is dysfunctional and infected with politics that compromise the recovery program and the survival of Mexican wolves.

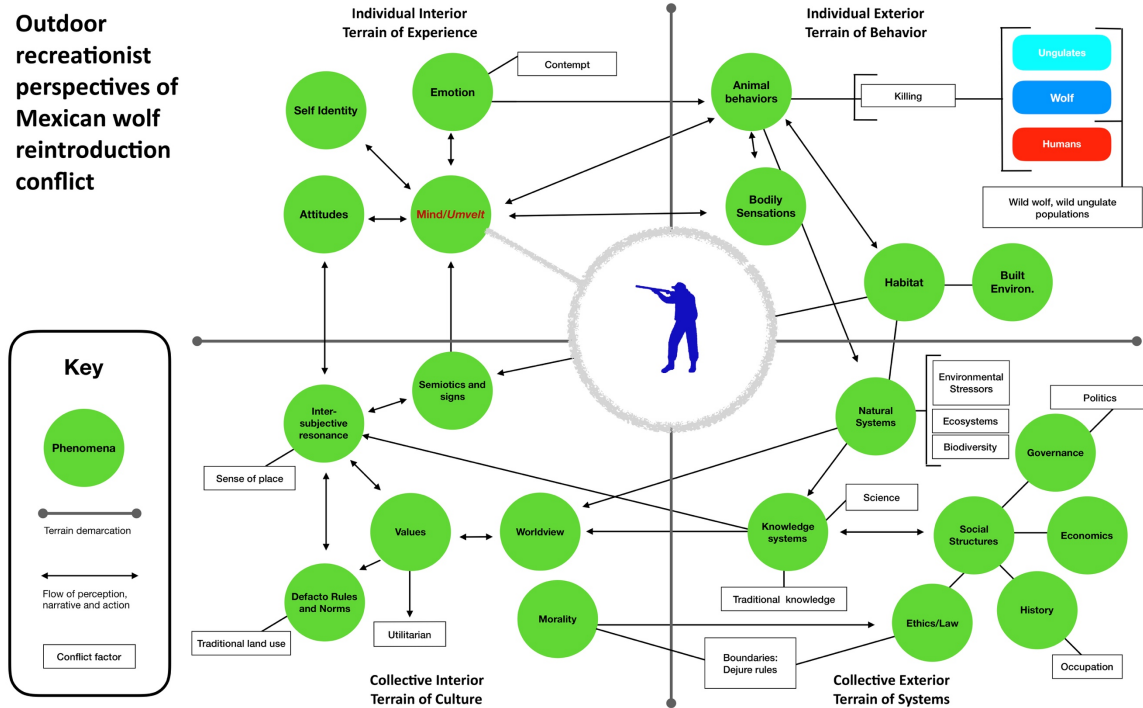
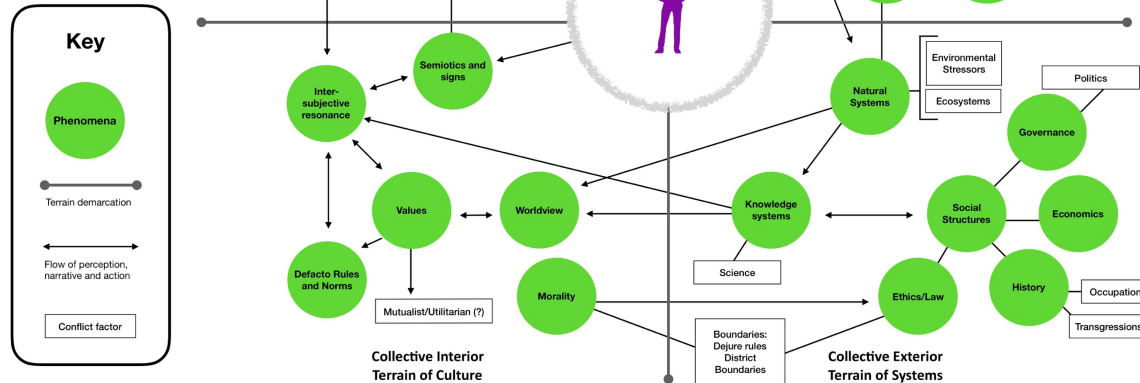


Figure 8.7d. Outdoor recreationist perspectives of Mexican wolf reintroduction conflict. While it is recognized that outdoor recreation includes non-extractive recreation, such as hiking, the outdoor recreation group was characterized by hunters and representatives of outdoor organizations specializing in outfitting for hunting and fishing. They expressed contempt toward FWS over politics and science; specifically for refusal to allow state game and fish agencies to manage the reintroduction effort. This group expressed a connection to the natural environment, and a utilitarian value orientation based on human access to wilderness and conservation of wolves and wild ungulates as natural regulators and resources. They expressed the importance of co-existence based on a resource conservation imperative.

The metanarrative for the outdoor recreationist group is that Mexican wolves have a place in the wild, as do people. Wolves serve an ecological purpose as regulators, but there is concern over wolves over-hunting deer and elk. FWS is dysfunctional and disconnected from the land and the wildlife, and state agencies could handle resource protection better than federal agencies.



**Government  
(non-federal)  
perspectives of  
Mexican wolf  
reintroduction  
conflict**



*Figure 8.7e.* Government perspectives of Mexican wolf reintroduction conflict. This figure represents perspectives of speakers who worked for non-federal government agencies or were elected officials speaking on behalf of constituents. The perspective of FWS is not represented in this figure as there were no speakers from FWS. Government speakers expressed contempt toward FWS over politics and science; specifically for refusal to allow state game and fish agencies to manage the reintroduction effort. This group was concerned about natural resources and economic stability. A value orientation could not be concluded from speakers in this group due to the representative nature of speaker comments.

The metanarrative for the non-federal government group is that Mexican wolves have a place in the wild, as do people. Concerns over personal safety and economic stability need to be addressed, but that protection of natural resources is also important and by extension, protection of wolves. FWS is dysfunctional and disconnected from rural living, and state agencies could handle resource protection better than federal agencies.

Wolves, livestock, and wild ungulates are also situated knowers; perceiving and responding conflict factors. They can be considered stakeholder groups in the recovery conflict. As humans we are limited to our perception of what non-human animals perceive and how they make and share meaning. Therefore, I acknowledge there may be non-human animal perceptions not accessible to me, and I do not presume to craft metanarratives for non-humans. The conflict factors listed for non-human stakeholder groups (Figures 8.8a, 8.8b, and 8.8c) are based on research in conservation biology, ethology and cognitive psychology, as well as observations and analyses in the context of Mexican wolf reintroduction.

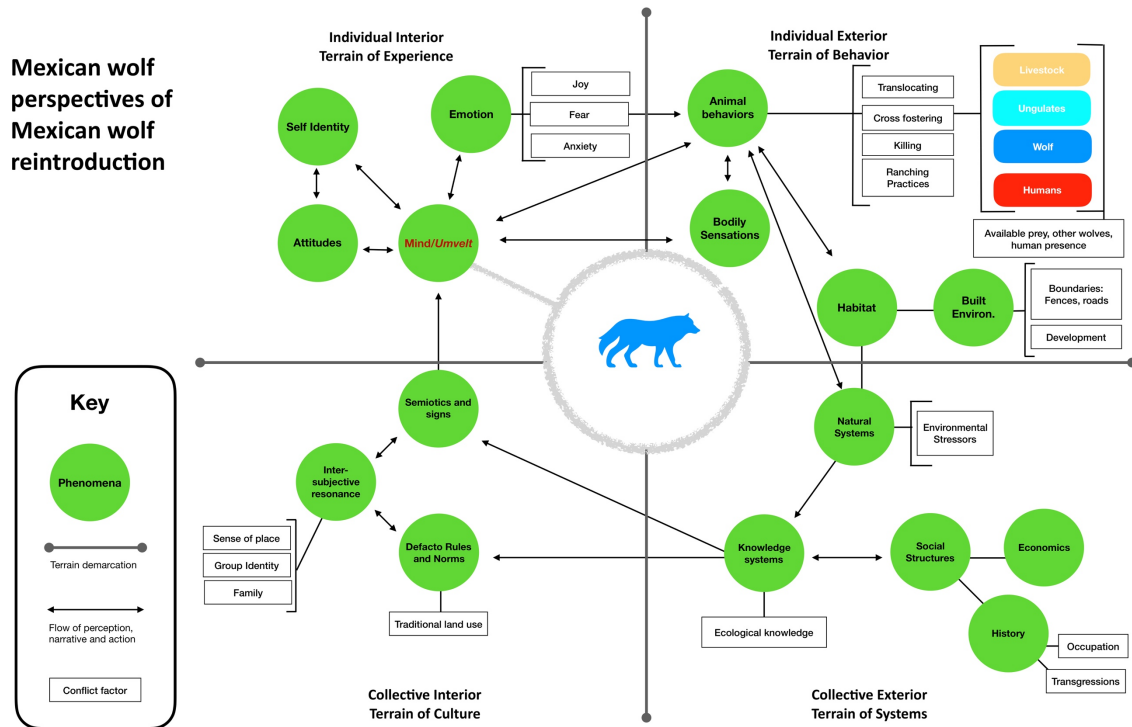
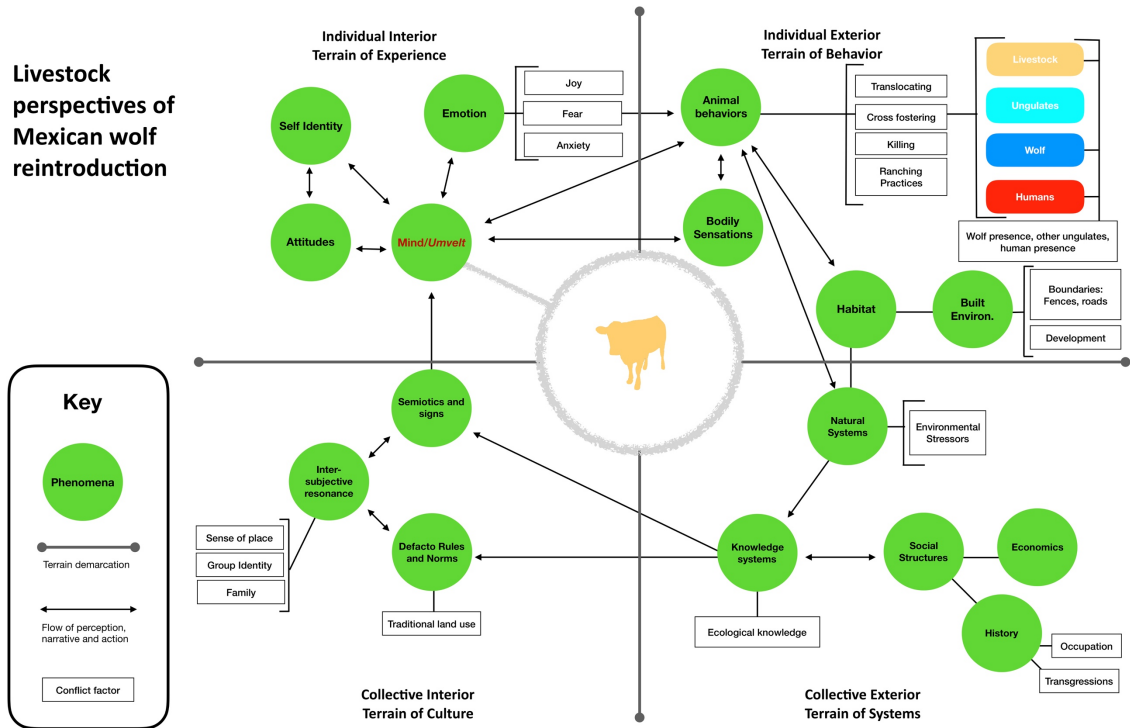


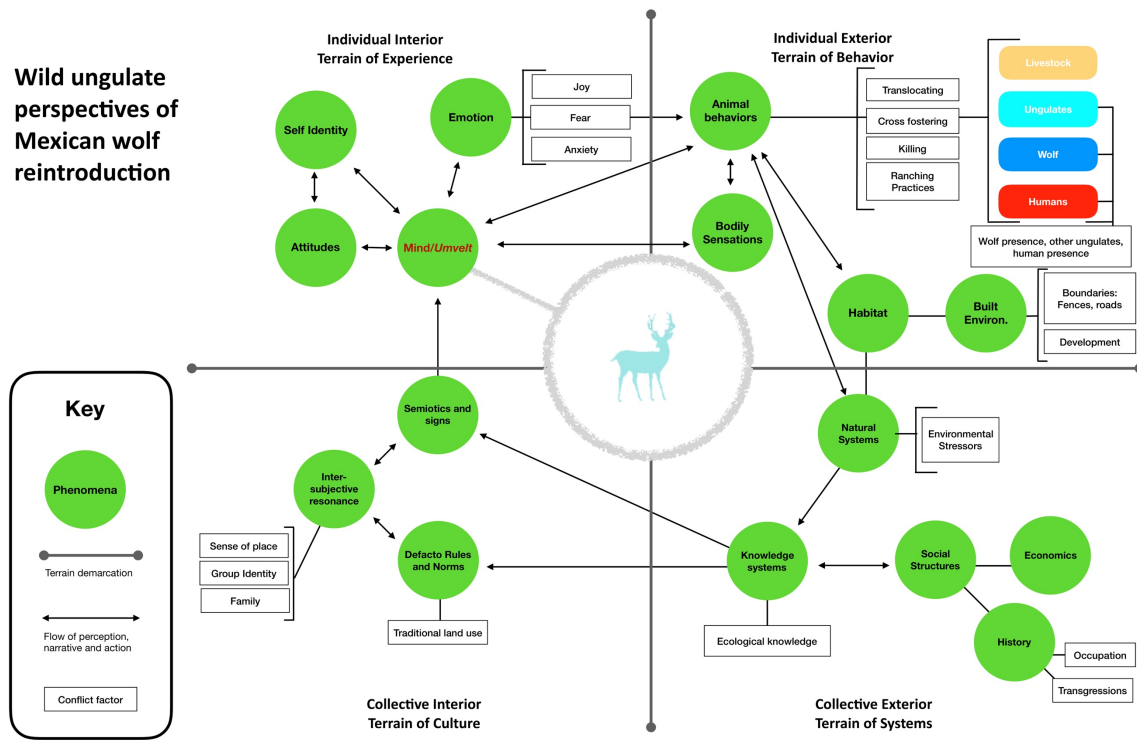
Figure 8.7a. Mexican wolf perceptions of Mexican wolf reintroduction conflict. Mexican wolves are at minimum negotiating establishment of territory, mate selection, and prey availability. They have familial bonds and social histories and traditional uses of the land. They have a history of occupation and of transgressions by humans. Reintroduced wolves negotiate the built and natural environments, and they must contend with making meaning out of translocation, cross-fostering, captive breeding, and killing by FWS. They perceive material boundaries but systemic boundaries such as property lines, edges of the recovery area and law are likely beyond their perception.

**Livestock perspectives of Mexican wolf reintroduction**



*Figure 8.7b.* Livestock perceptions of Mexican wolf reintroduction conflict. The body of this research does not address livestock ethology. However it is acknowledged that livestock are habituated to humans, have familial bonds, social histories, and traditional uses of the land, and that they can perceive material boundaries. Further, they can perceive the threat of a wild predator such as a wolf. Wild ungulates were presumably not a concern of livestock, though they are likely apprehended.

**Wild ungulate perspectives of Mexican wolf reintroduction**



*Figure 8.7c.* Wild ungulate perceptions of Mexican wolf reintroduction conflict. The body of this research does not address wild ungulate ethology. However it is acknowledged that wild ungulates have familial bonds, social histories, and traditional uses of the land, and that they can perceive material boundaries. Further, they can perceive the threat of a human or wild predator such as a wolf. Livestock were presumably not a concern of wild ungulates, though they are likely apprehended.

## 8.17 Summary of Findings

The agricultural LG is a subset of the rural RGB. Within the agricultural LG, the autonomous utilitarian value orientation and associated resistance to the government and to wolves did not characterize the entire agricultural LG, as nearly 20 percent of the speakers with agricultural livelihoods did not have these characteristics. The data suggest that stakeholders at this extreme are a vocal minority. Nevertheless, the voice of this minority remains powerfully influential in management of Mexican wolves and the direction of the recovery program due to political backing of regional and national livestock associations. Success of the recovery program, therefore, must respond to the social needs of this group. The data suggest that this group's greatest issue is contempt for a government perceived as a lawless intruder and a threat to autonomy. Therefore, trapping, killing, and relocating wolves won't address the anxiety, contempt and outrage reverberating against the wolf. Social interventions must be made in the terrains of experience, culture, and systems; not in the terrain of behaviors where current conflict interventions are focused.

Security, belonging, and rightness are shared values amongst all LGs and RWBs despite opposing positions and attitudes. However, there are differences in how those values manifest as attitudes and behaviors. Security was contextualized in terms of livelihood, tradition, personal safety, environmental stability, program stability, genetic stability, and wolf or ungulate population stability. Belonging was conceptualized as place or territory. These two conceptions of belonging are not mutually exclusive, and they were often held in tandem by individual speakers. Rightness was characterized as rightness for people, rightness for wolves, and rightness of principle (integrity).

Differences in value manifestations are fundamentally driven by differences in ontological and epistemological positions (Marsh and Furlong 2002). Wolf recovery advocates expressed a worldview of life as connected, which engendered a mutualist value orientation, a drive toward unity, and a sense of belonging in shared space and being with wolves. This sense of belonging is linked to an ethical imperative to obtain security for the wolf and for the environment in order to achieve rightness. Conversely, wolf-recovery dissenters expressed a worldview of humans as separate from and dominant over nature, which engendered a utilitarian value orientation, a drive toward autonomy, and a sense of *not* belonging in shared space with wolves. This perception of belonging was linked in an ethical imperative to protect ranching families in order to achieve rightness.

Anxiety in speaker comments was driven by uncertainty, and contempt and outrage were driven by perceptions of weakness or corruption in conservation governance. The goal of security is compromised by this uncertainty and lack of faith in governance. Recovery advocates are mediating uncertainty over Mexican wolf success and the long-term health of the shared environment, while those opposed are mediating uncertainty tied to personal safety and livelihood in the short term and economic stability in the long term.

Most rural opposition came specifically from speakers in the agriculture LG and was conceptually linked to contempt for federal institutions. Within this group, most expressions of contempt and outrage toward FWS were linked to the “government as corrupt” narrative, and the “rancher as victim” narrative. While some contempt for the

wolf was expressed, it came from a small subset of the agricultural LG. This indicates that media characterizations of rancher disdain for wolves are exaggerated.

Nearly all expressions of fear of wolves (of depredation or attack on humans or pets) came specifically from the same subset of the agricultural LG. Unless wolves are selectively stalking the children of ranchers, this reflects a strong fear bias toward wolves amongst a subset of the agricultural community. Such bias may be the result of conceptual transfer of wolf depredation on livestock to wolf depredation on humans. Alternatively, transfer of this depredation narrative from livestock to people could be cognitive, and a form of political resistance; with ranchers invoking narrative of human attacks to elicit the social response not forthcoming for livestock depredation (i.e. livestock depredation may not strike an emotional chord with the general public, but everyone cares about a threat to a child). The narrative link between politics, power, and fear of wolves is particularly well illustrated in one speaker's statement:

“It's an all-out assault on these ranching families. Many are already at the brink of going out of business. This new proposal is sure to push many more off their land. When will the fear stop? These families live in daily fear of losing the family dog, their favorite horse, or worse, a child. When a mom finds a wolf in the backyard stalking an Australian shepherd, it's easy to imagine the toddler on the swing set is next [TC116].”

Kid cages, by extension, operate to reify resistance to the government, and may in fact have been constructed for that purpose. Once constructed, these cages became part of the fear landscape; simultaneously symbolic of oppression and the encroachment of the wild: If a cage is there, a wolf must be lurking nearby, and if children must live in cages,

the government must not care. In this materially manifested narrative, children are proxy for livestock, and wolves proxy for the government.

While an agricultural livelihood is co-related to Mexican wolf opposition, rural living is *not*. There was strong support for Mexican wolf recovery in rural areas, including those within the BRWRA and in the proposed expansion area most likely to support wolves in the future. Many rurally based speakers expressed a strong connection and stewardship obligation to the land, implying a value of mutualism amongst rural stakeholders, contrary to the theory of wildlife values shift presented by Manfredo et al. (2009), which implies a utilitarian focus amongst rural dwellers. Rurally based ranchers, however, were predominantly (and most of them explicitly) utilitarian oriented. This suggests that livelihood as opposed to rural or urban living is the defining influence on an individual's place on the mutualist-utilitarian orientation spectrum: It's not about *where* you live, it's about *how* you live.



## CHAPTER 9

### CONCLUSION

#### 9.1 Case Study Conclusion

The case study analysis revealed that Mexican wolf reintroduction conflict is not about the Mexican wolf. Mexican wolf conflict is about goals of security, belonging, and rightness, which are compromised by power structures perceived as unstable, unharnessed, and restrictive of agency. Mexican wolf recovery is broadly perceived by stakeholders as a chaotic battle, plagued by misinformation, misunderstanding, and mistrust. The recovery conflict is strongly marked by feelings of anxiety, contempt, and outrage amongst stakeholders, who are both assertive and defensive toward federal powers identified as: FWS, the ESA, and the federal government *writ large*.

The findings of this study support the conclusions of Decker et al., who argue that conservation in the U.S. is failing because governing institutions are distant from the broad spectrum of people and interests they represent, and that without new governance structures that address issues of trust, uncertainty, and the efficacy and relevance of wildlife conservation, conservation efforts will not succeed (Decker et al. 2016). These findings further support Manfredo et. al. who argue this imperative demands that the conception of conservation, discussion of conservation, and methods of achieving conservation must likewise be revisited (Manfredo et al. 2017).

Based on the findings of this research, the recommendations outlined herein directly address ways to work within existing stakeholder value structures to move Mexican wolf conservation forward in a way that is inclusive of all stakeholder groups.

## 9.2 Recommendations for Mexican Wolf Recovery

Based on findings, I make the following predictably controversial recommendations for the Mexican wolf recovery program: 1.) Remove the ESA 10(j) exception and provide full ESA protection to Mexican wolves, 2.) Increase local level autonomy, 3.) Restructure depredation compensation programs, 4.) Increase the agency of states.

### 9.2.1 Eliminate the 10(j) Designation for Mexican Wolves

The 10(j) rule was intended to mitigate uncertainties, but it has had the opposite effect. The rule was engaged to improve the success of Mexican wolf reintroduction by allowing FWS flexibility in managing wildlife and managing social tolerance, but the rule has failed in both objectives.

The rule has allowed for too much ambiguity in conservation, which has enhanced uncertainty for stakeholders both for and opposed to recovery. Regardless of stakeholder LG, RWB or issue position, stakeholders want clarity, not the chaos generated by a constant shifting of direction in response to political influence that is enabled by the 10(j) rule. Carroll et al. (2019) highlight that over the years of the recovery effort, FWS convened three successive recovery teams, each time disbanding the team because they could not build a team that met “science-based” criteria and that was also politically acceptable to influential state politicians (Carroll et al. 2019). Such accommodations undermine science and compromise the integrity of FWS; two things that are absolutely essential to ameliorating uncertainty about the recovery effort, from any stakeholder perspective.

The ESA mandates that recovery be guided by the best available science, with a goal to halt and reverse species extinction. It is unencumbered by social concerns. The 10(j) rule effectively allows endangered species conservation to be guided by politics and social pressure, serving to undercut the mission of the ESA and cripple species recovery interventions (i.e. by prompting FWS to limit important reintroduction of well bonded wolf pairs, which would increase their survival thereby imbuing the wild population with the genetic diversity currently held in captivity). While the ESA is not a favorite institution of ranchers, it offers more clarity than the 10(j) rule. Essentially, folks want to know what is going on and what they can expect; the 10(j) rule keeps everybody guessing. Full protection of Mexican wolves under the ESA would empower FWS to act with conviction, and this would reduce the misinformation, misunderstanding and mistrust that pollute Mexican wolf recovery.

Importantly, as the data suggest, the rule, even at its most ideally operable, would serve a vocal minority within the agricultural community. Federal institutions and invasive wildlife management practices designed to serve a vocal minority are contra conservation and represent a significant FWS mission drift.

### 9.2.2 Increase Local Autonomy

The issue of scale is significant in Mexican wolf conservation because administration of the Mexican wolf reintroduction program is federal, and conservation interests are strong nationwide, while the impact of Mexican wolf reintroduction is regional, and in some cases very localized. Public lands belong to all Americans, and wildlife are recognized as national assets for extraction, ecological function, and cultural

value. Management of public lands and associated wildlife is therefore a national concern. However, ranchers rely on public lands to graze livestock and many perceive the reintroduction of Mexican wolves as an invasion of privacy and a threat to their autonomy. For speakers in the agricultural community, belonging emerged as a blend of sense of place and sense of territory; the former tied to traditional use of the land, and the latter tied to current use of the land; grazing leases and property rights.<sup>229</sup>

Ranchers want to maintain autonomy to continue living in their traditional ways without interference of the federal government. As explained earlier, many who settled in this region did so purposely to be able to live autonomously. Mexican wolf reintroduction is perceived by this group as a threat to that autonomy. Data suggest this threat is less about the potential invasion of the wolf than it is about the potential invasion of the federal government, but narrative has entwined the two.

Reducing the threat to autonomy could increase local tolerance for Mexican wolves. This is not to suggest that FWS grant the agricultural industry free rein on public lands (we all know what happened last time), but an exploration of local level micro-governance structures is warranted. These structures could allow for some regulation at the community scale, with federal oversight that is perceived as less invasive. Elinor Ostrom (1990) theorized that top-down regulation is not always needed to avoid the tragedy of the commons, assuming particular design principles are in place.<sup>230</sup> These

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<sup>229</sup> Several speakers in the agricultural community made comments about their private property rights being violated, implying that there is a sense of personal ownership of the lands they graze their livestock on. While this may still be a vocal minority, sensitivity to this perception would be helpful in managing human relationships, as opposed to the current focus on how to manage wolves.

<sup>230</sup> Ostrom's design principles were: 1.) Clearly defined boundaries, 2.) Proportional equivalence between benefits and costs, 3.) Collective-choice arrangements, 4.) Monitoring, 5.) Graduated sanctions, 6.) Conflict-resolution mechanisms, 7.) Minimal recognition of rights to organize, and 8.) Nested enterprises Ostrom, E. 2005. *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press..

principles include a degree of local autonomy and, in situations of broad scale public domain resources such as national wildlife, nested (or polycentric) governance with well-defined roles (Ostrom 2005, 269). Rural stakeholders are predominantly supportive of wolf recovery, and if micro-governance structures were implemented at the community level (and not according to livelihood group) there may be potential for some level of effective self-regulation and self-sanctioning.

Increasing autonomy could facilitate investment in Mexican wolf conservation for those currently opposed. Commitment could be additionally facilitated by increased clarity of long-term recovery goals and the beneficial implications of successful wolf recovery; specifically, the potential for wolf recovery to increase local autonomy. One of the biggest contentions about wolves over other predators is that they are protected by a federal law and managed by a federal agency. When the original Mexican wolf recovery plan was drafted in 1982 there was no plan for eventual ESA delisting of Mexican wolves, as a fully successful recovery in the wild was considered unlikely (FWS 2017e).<sup>231</sup> The updated recovery plan (not available at the time of the hearings in this study) includes a plan for downlisting or delisting if Mexican wolf populations achieve the *resiliency*, *representation*, and *redundancy* benchmarks outlined in the recovery plan (FWS 2017e).

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<sup>231</sup> The “Rationale for Recovery Criteria” in the recovery plan provides the following definitions: “*Resiliency* describes the ability of populations to withstand stochastic events. *Redundancy* describes the ability of a species to withstand catastrophic events. *Representation* describes the ability of a species to adapt to changing environmental conditions. FWS. 2017c. Mexican wolf recovery plan: First revision. Albuquerque, NM: Department of the Interior. U.S. Fish and Wildlife Service. Southwest Region (Region 2).

Ranchers want to see the Mexican wolf delisted; they want to have less federal intervention; they want to see fewer Mexican wolf reintroductions; and they want less concentration of wolves near human occupied areas.<sup>232</sup> However, achieving the recovery goals for delisting hinges on allowing timely reintroductions of well bonded wolf pairs, increasing wolf territory to improve genetic diversity in the wild, establishment of a stable population that can withstand environmental change, and reduction of illegal wolf killings and legal wolf takes (i.e. increased tolerance for wolves). If ranchers want to see the federal government disengage in the future, they should logically be supporting efforts for successful reintroduction of Mexican wolves in the present day. Working with ranchers to help them understand the long-term trajectory of the program and the ancillary benefits of success could help the program move forward more expediently and with more potential success. Removal of the 10(j) rule, as discussed, could alleviate some of the ambiguity that makes the agricultural community distrusting of the planning process and could increase planning cooperation.

### 9.2.3 Restructure Depredation Compensation Schemes

While compensation schemes seem like a logical solution to wolf intolerance, compensation for wolf coexistence is a slippery slope for several reasons:

- 1.) Depredation compensation programs aim to increase wolf tolerance amongst ranchers by addressing the material impact of wolves. However, as illustrated, the material impact of wolves is insignificant. Ranchers are grazing cattle on public lands,

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<sup>232</sup> Several speakers felt reintroduced wolves were more likely to be habituated to humans, and by extension a greater threat, than wild born wolves.

which are shared by many other species including other predators. Compensation for predator depredation sets a precedent for the American public (i.e. taxpayers and the conservation community) to be financially accountable to ranchers for all predator depredation. It also creates a financial incentive to blame wolves for other predator acts.<sup>233</sup>

2.) Ranchers are not compensated for cattle losses due to natural forces such as lightning strikes, heavy rains, or drought. Compensating ranchers for wolf depredation sets wolves apart from nature and reinforces the idea that depredation is abnormal or monstrous behavior that must be mitigated with killing or translocation of “problem” wolves. This practice restricts wolves from *being* wolves and reinforces negative perceptions of wolves. Wolves are naturally inclined to hunt opportunistically, and current ranching practices present opportunity for wolves because livestock are minimally monitored and when livestock die (from any cause) their carcasses are often left for scavenging. Compensation programs should be strictly in support of changing ranching practices because changing the nature of the wolf is undesirable and ultimately unattainable.

3.) Depredation compensation engenders a sense of entitlement in the livestock industry.<sup>234</sup> Entitlement is the outgrowth of a precedent set by the government with

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<sup>233</sup> Coyotes and dogs are responsible for much greater depredation than wolves nationwide. In 2001 the National Agricultural Statistics Service reported 59.4% of total cattle depredation in Arizona, and 84% of total cattle depredation in New Mexico was by coyotes and wild dogs. USDA APHIS. 2017. Death Loss in U.S. Cattle and Calves Due to Predator and Nonpredator Causes, 2015. Fort Collins, CO: USDA Animal and Plant Health Inspection Service. Because of their similarities to wolves, misattribution of depredation to wolves is common.

<sup>234</sup> Since the 2014 hearings, funding has become available to assist ranchers in changing practices to promote better wolf coexistence.

grazing leases subsidized by American taxpayers and with past sponsorship of wolf eradication. The livestock industry faces many challenges including water scarcity and market drops. Compensating ranchers for wolf impacts reinforces the idea that the government is responsible to secure the livestock industry in general. Depredation compensation reinforces the “rancher as victim” identity because it contextualizes payment for depredation as compensation for an implied transgression. It also reinforces negative stereotypes of ranchers as opportunists or freeloaders, which aggravates social conflict.

4.) Autonomy bears responsibility and accountability. For ranchers to have the autonomy they want, they should logically be expected to shoulder the risk of ranching on public lands and in wilderness areas. Predator depredation on public lands is an inherent risk assumed with grazing livestock on public lands, which could be compared to the risk an individual takes when building a house on a fault line.<sup>235</sup> As depredation is unevenly distributed, some ranchers bear greater impacts than others, which are potentially devastating for an individual rancher. Thus, support for ranchers suffering impacts from wolves is warranted. However, such support is better offered in the form of industry support from livestock associations, depredation insurance programs, or social programs at the community or regional level. Currently the cost of depredation compensation is shared by federal and state governments and the conservation community.

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<sup>235</sup> As noted earlier, some ranchers acknowledge and accept these risks as inherent and willing bear responsibility for these risks.



Government dependency is a source of contention fueling acrimonious relationships, lawsuits, and stand-offs in the Southwest, and it significantly aggravates tensions in the Mexican wolf recovery area. Federally sponsored depredation compensation creates greater government dependency for ranchers and represents a reduction of rancher autonomy. This is a move in the wrong direction and has reasonable potential to backfire.

5.) Compensation schemes place focus on the material aspects of Mexican wolf recovery and do not address the far more significant social, psychological and cultural aspects contributing to wolf intolerance such as fear of wolves, distrust of science, and distrust of federal agencies.

Reevaluation of depredation compensation schemes with consideration of the above factors could improve Mexican wolf recovery by increasing rancher autonomy, increasing accountability of the livestock industry, and reducing social conflict by allowing the livestock industry to shoulder its own risks and care for its own. It would further reduce perceptions of bad wolves or problem wolves and promote acceptance of wolves being wolves, thereby increasing potential for tolerance of coexistence over time.

### 9.2.3 Increase Agency of States

State agencies have typically better relations with locals than federal agencies, so increased state management could alleviate some of the political tensions polluting Mexican wolf recovery as long as FWS retains oversight in a polycentric governance structure. However, state control of wildlife is a delicate issue and a shift toward

increased state agency would require careful planning and clear definition of management and institutional boundaries

Unlike FWS which has a focused mission to “conserve, protect and enhance fish, wildlife, plants and their habitats (FWS 2019c)”, state game and fish agencies have mandates and missions that are potentially in conflict with Mexican wolf recovery. State agency missions are focused on conservation for recreational and resource extraction purposes (AZGFD 2019a; NMDFG 2019), and the funding mechanisms for state game and fish departments secure significant agency funding from hunting, fishing and other outdoor recreation licensing that could be in conflict with Mexican wolf recovery. If Mexican wolves are delisted, this position states to allow wolf hunting in order to increase state revenue.

Additionally, state agencies do not have the authority to enforce the ESA on public lands, and if they did, enforcement would be complicated by state level economic goals over national level conservation goals. Because there is localized resistance to predators, national oversight of wildlife on public lands is needed to mitigate the risk of decisions or management practices that serve the needs of a localized population of people over the needs of the greater American public (essentially what is currently happening under the problematic 10(j) rule).

Despite the challenges of implementing a polycentric governance structure for Mexican wolf conservation, such a structure could create a more collaborative environment because stakeholders opposing Mexican wolf conservation have less combative relationships with states. FWS already collaborates with state agencies on Mexican wolf reintroduction and expanding those collaborations, with clearly defined

governance boundaries could improve communications and local engagement in, and tolerance for Mexican wolves on the public lands.

### 9.3 Forward Thinking

The border between human and non-human animal has arguably been guarded against unifying ideas throughout history that have been viewed as a threat to human dominion, and to established social hierarchies. Eighteenth century science was grounding reality in rational thought and empirical demonstration that aimed to dispel myth and fantasy and draw distinct boundaries between humans and nature. The resultant narrative of human- non-human animal separation has maintained a system of hierarchies that several hundred years of science, technology and social structures have been built on. Destabilizing this divide is intellectually complicated because challenging this divide is a challenge to the foundation of science; an institution on which a lot of faith is based and a lot of money invested. It is also potentially threatening for its socially de-stratifying implications.

Soulé argued in 1985 that conservation and animal welfare are conceptually distinct, subject to different ethical imperatives and thus should be politically separate, with conservation focused on the integrity and continuity of natural processes (Soulé 1985). His assertion that a dichotomous agenda must be pursued rests on the assumption that humans and nature are separate, and human exceptionalism still dominates science. In a 2012 revisitation of Soule’s “What is Conservation Biology?” (1985), Peter Kareiva (then Chief Scientist of the Nature Conservancy) and Michelle Marvier argued human

well-being must be included in the Conservation Science agenda (Kareiva and Marvier 2012):

“... in conservation science, strategies to jointly maximize benefits to people and to biodiversity are pursued; it is a discipline that requires the application of both natural and social sciences to the dynamics of coupled human–natural systems (Kareiva and Marvier 2012) (962)”.<sup>236</sup>

I would argue the *only* way to maximize benefits for people is to maximize benefits for nature without privileging humans in the benefit distribution.<sup>237</sup> Human well-being *is* included in the Nature conservation agenda because humans are part of Nature.

Separating human well-being from the well-being of non-human nature and putting human well-being separate but on par from all other life risks adulterating conservation. While rhetorically, it may seem useful to contextualize the environment explicitly in terms of service to humans, perpetuating this narrative reinforces the fundamentally flawed axiom that cultivates the very utilitarian value orientation which undermines conservation.

The sixth extinction is an environmental crisis of unprecedented scale and complexity that is underscored and aggravated by human alienation from Nature (Balmford and Cowling 2006). Value orientations influence stakeholder beliefs and attitudes toward landscapes and wildlife. They affect comfort level with wildlife coexistence, willingness to modify consumptive, livelihood, or traditional practices to

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<sup>237</sup> Many people in the conservation community would agree. Significant intellectual debate followed Kareiva and Marvier’s proposition Kloor, K. 2015. The battle for the soul of conservation science. *Issues in Science and Technology*, 31, Online..

accommodate wildlife and landscape needs, and willingness to collaborate in conservation efforts. Categorical exceptionalism fundamentally alienates humans from the natural environment and engenders a utilitarian value orientation, which propels exploitive behaviors toward Nature and non-human beings. Science reinforces utilitarian approaches to conservation because it reinforces Cartesian foundations upon which utilitarian values are based.

Due to the slow changing nature of values, there is a need to work within existing value structures. Therefore, practical conservation requires meeting people where they are subjectively, materially, and environmentally situated. Narrative is a powerful operative linking individuals to environments, other beings, cultures and social structures. Promoting value change requires pushing corrective narrative by addressing the foundational fallacies. Showing up at the Capitol with a “Descartes Was Wrong!” picket sign won’t make much difference for the likes of wolves. However, changing the narrative of science is a promising avenue for changing conservation values.

The current ecological crisis mandates a new scientific paradigm. Conservation success requires reframing historical positionings of human and non-human animals in philosophic and scientific domains. [Re]animating nature and [Re]animalizing the human are fundamentally inclusive propositions. Given the consequential weight of reanimation and reanimalization, a radical shift in science is unlikely.<sup>238</sup> However, cultivating a “wild practice” to disrupt superficial boundaries by repositioning humans within the wild, will dismantle flawed precepts of human right or obligation to control the wild (Elder et al.

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<sup>238</sup> A *radical* shift might not even be desirable for conservation because many environmental and wildlife protection institutions are drafted on the basis of a split between humans and non-human animals, and a dramatic shift could uproot existing wildlife protections.

1998) that have handicapped conservation. Making or even entertaining these conceptual shifts in conservation landscapes promises to deepen understanding of conservation conflict and broaden the opportunities for successful conservation.

#### 9.4 Denouement

The final rule for *Revision to the regulations for the nonessential experimental population of the Mexican wolf (Canis lupus baileyi)* (80 FR 2512) became effective on February 17, 2015. The final rule granted Mexican wolves independent status as an endangered species.<sup>239</sup>

The rule eliminated the BRWRA and replaced it with an expanded recovery area (the MWEPA), which includes all of Arizona and New Mexico south of I-40. The revised rule increases the area Mexican wolves can naturally occupy, as well as the area available for initial releases. The recovery area is split into three management zones, none defined in terms of habitat or ecological connectivity. The southern boundary is defined by the U.S. -Mexico international border; the Northern boundary is defined by I-40; and eastern and western boundaries are defined by state borders between New Mexico and Texas, and between Arizona and California, respectively. Within the recovery area, boundaries between zones two and three are defined by state or interstate roadways. Grand Canyon National Park remains excluded from the recovery area (FWS 2015a) (Figure 7.15).

The revised rule also increases FWS provisions for killing Mexican wolves to

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<sup>239</sup> A proposal for delisting gray wolves was made public on March 15, 2019, and is currently in review. FWS. 2019a. Endangered and threatened wildlife and plants; Removing the gray wolf (*Canis lupus*) from the list of endangered and threatened wildlife. ed. United States Fish and Wildlife Service, 9648-9687. Washington, DC: Department of the Interior, U.S. Fish and Wildlife Service,.

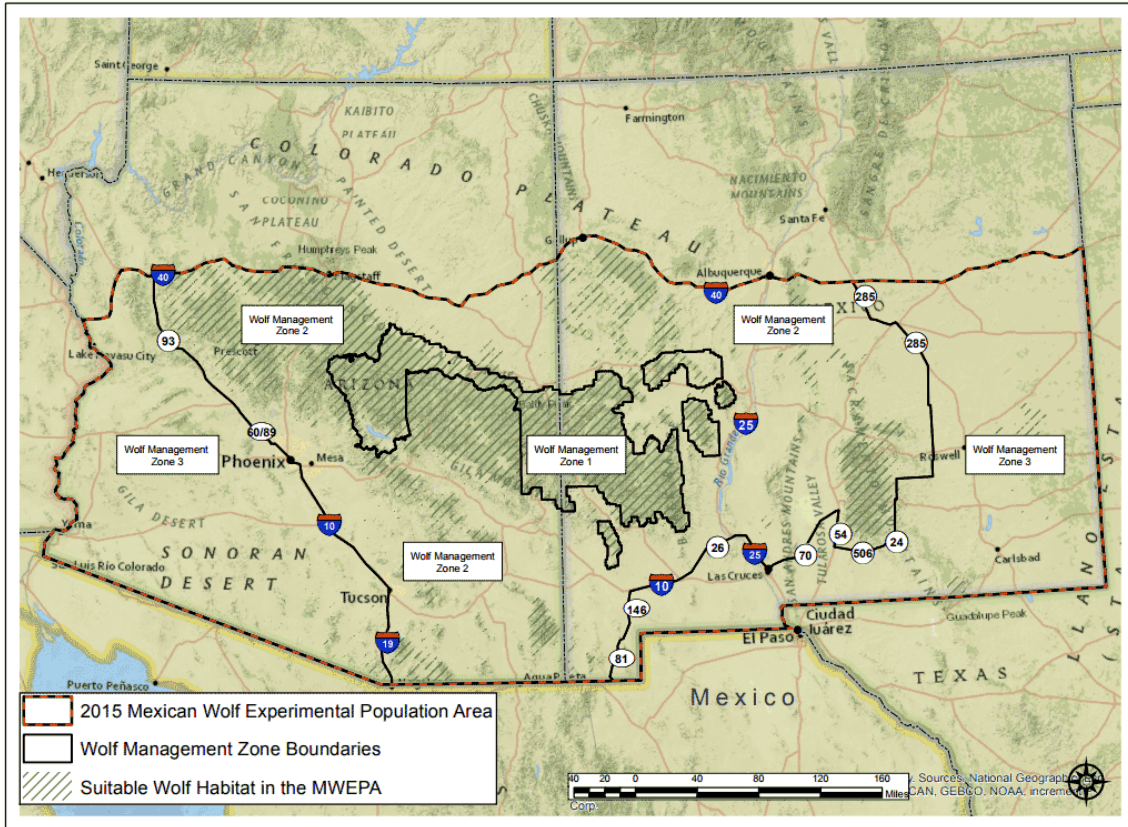
protect livestock, domestic dogs, and to manage wild ungulate populations if needed. The rule specifies a target population of 300-325 wild Mexican wolves (FWS 2015a).<sup>240</sup>

In 2016 pay-for-presence programs were developed, in which ranchers with grazing allotments overlapping Mexican wolf territory are paid to tolerate sharing the public landscape with wolves. Council funds are matched by Defenders of Wildlife and The Mexican Wolf Fund (Mexican Wolf/Livestock Coexistence Council 2014, i). In Arizona, impacts are also offset by the funding from the Arizona Loss Livestock Board (FWS 2019e).

In November 2017 FWS published the first revision of the Mexican Wolf Recovery Plan (FWS 2017e). This update to the original 1982 recovery plan includes criteria for eventually delisting or downlisting Mexican wolves.

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<sup>240</sup> The modified wolf take provisions allow FWS to issue a permit to livestock owners or their agents to kill or harass a Mexican wolf that is in the act of biting, killing, or wounding livestock on Federal or non-Federal land. ---. 2015b. Fact sheet 2015 final rule: Endangered and threatened wildlife and plants; Endangered status for the Mexican wolf. Washington, DC: Department of the Interior, U.S. Fish and Wildlife Service.



*Figure 8.9.* Mexican Wolf Experimental Population area. Three zones were established within the MWEPA. Zone 1 is the former BRWRA (all of Apache and Gila National Forests, plus the Sitgreaves National Forest, the Magdalena Ranger district of the Cibola National Forest, and the Payson, Pleasant Valley, and Tonto Basin ranges of Tonto National Forest. Zone 1 has 83% suitable wolf habitat. This is the reintroduction release zone and the primary recovery area. Zone 2 is an additional area on which wolves can be translocated or are free to naturally disperse into. Zone 3 is strictly an area where wolves are allowed to naturally disperse. No releases or translocations will occur in zone 3 (FWS 2015a).



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APPENDIX A  
CODEBOOK



## A.1 Source Material Background

### Case Study: Mexican gray wolf reintroduction

We are coding transcripts of two 2014 public hearings (1. Pinetop, AZ and 2. Truth or Consequences, NM) on the FWS Mexican gray wolf reintroduction program. The hearings consist of public statements (a maximum of 2 minutes long each), made by individuals representing themselves, their families, an organization or their constituents.

## A.2 Coding Goals

The aim of this coding is to identify, in the context of each case study:

- Stakeholder felt experiences, intentions
- Stakeholder beliefs, values, attitudes
- Narrative influences

\*Additional coding will be done by the PI to identify relevant individual stakeholder practices and behaviors, as well as influential systemic factors such as governance, management, politics, economics and knowledge systems.

The unit of analysis is the individual. We will be coding for metaphoric, emotional and narrative constructs via multiple coding passes with particular coding protocols as described in the following pages. Consult the PI with any questions about this codebook.

We will be using the same transcript copy to code for multiple codes, so the transcript will quickly get to be full of markups. In order to keep the coding legible, please keep highlighting clean and clear, do not cross out sections of the transcript and do not write over the top of existing text. Feel free to make pencil notes in the margins of the documents as needed.

Do not code: Titles, speaker names, statements made by hearing facilitators, hearing identification information, hearing formalities or comments.

## A.3 Extant Coding

### Apriori Codes

Individual statements have been saved as individual documents and coded *apriori* with gender identifiers in the document name (Female [0] and Male [1]), and a numerical code corresponding to the speaker (stakeholder) name.<sup>241</sup>

### Structural Codes

A number of structural codes have been assigned at the level of the individual statement.

Codes have been assigned to indicate:

- Representation (speaking on behalf of self/family or others), profession (knowledge domain), and position (pro- or- anti Mexican wolf territory expansion)
- Formal or informal group affiliation with one of the stakeholder groups (communities) focused on
  - Case 1: 1.) Agriculture, 2.) Outdoor recreation, 3.) Government, 4.) Conservation
  - 5.) Other
- Residence or work base

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<sup>241</sup> Statements for the case study are public statements and are posted publicly on the FWS website, thus speakers identities are public information. However, a numerical code was utilized for the purposes of protecting speakers from being specifically named in research publications utilizing this data.

<b>STRUCTURAL CODES</b>		
Code	Mnemonic	Description
Representation	R-	Representation is indicative of stakeholder's perspective.
Representing Others	R-OTH	The stakeholder explicitly states he/she is representing an organization or constituents.
Self Representing	R-SELF	The stakeholder explicitly states he/she is self-representing or representing family or does not indicate representation of self or others (it is assumed that if representation is not indicated, that the stakeholder is self-representing).
Unknown	R-U	It is unclear or confusing if the stakeholder is representing self/family or others.
Profession		Profession is indicative of stakeholder's means of livelihood, practical work, dedicated volunteer experience, or knowledge domain (current or retired).
Science	P-SCI	The stakeholder explicitly states he/she is any kind of scientist, including conservation scientist, by credentials or profession.
Governance	P-GOV	The stakeholder explicitly states he/she is a politician or policy maker or works for a government agency by profession. This includes game and fish departments, and parks and recreation departments.
Conservation	P-CON	The stakeholder explicitly states he/she works for a conservation organization or is otherwise a conservation activist by profession. Excludes conservation scientists (who are in the science category). Excludes individuals who are engaged in activism but state they have another profession.
Agriculture	P-AG	The stakeholder explicitly states he/she is a rancher, a farmer, or works for a ranching or farming organization or otherwise works in an agricultural industry. Includes any kind of working the land for livelihood (i.e. ranching, farming, dairy, logging).
Outdoor Recreation	P-REC	The stakeholder explicitly states he/she works in the outdoor industry or represents an outdoor industry organization. Includes hunting, fishing, merchandise, tourism, hiking and expeditions. Excludes government agencies like game and fish departments, and parks and rec departments, which are under the governance category.
Other	P-OTH	The stakeholder explicitly states his/her profession is in an industry other than science, governance, conservation, agriculture or outdoor recreation as defined above.
Unknown	P-U	The stakeholder does not explicitly state his/her profession.
Issue Position	IP-	Issue position is indicative of perspective on issue of Mexican wolf reintroduction or expansion of Mexican wolf territory.
Pro	IP-PRO	The stakeholder explicitly states he/she is supportive of Mexican wolf reintroduction or territory expansion.
Opposed	IP-OP	The stakeholder explicitly states he/she is supportive of Mexican wolf reintroduction or territory expansion.

Leaning Pro	IP-LPRO	The stakeholder tacitly expresses he/she is supportive of Mexican wolf reintroduction or territory expansion.
Leaning Opposed	IP-LCON	The stakeholder tacitly expresses he/she opposes Mexican wolf reintroduction or territory expansion.
Unknown	IP-UN	The stakeholder statement does not indicate a clear position on the issue of Mexican wolf reintroduction or expansion.
Stakeholder Group	SG	
Ranching/ Farming Community	GRP-RF	A group made up of stakeholders explicitly stating they are ranchers or farmers, represent ranching or farming organizations and those whose statements tacitly indicate a strong and priority affiliation with the ranching and farming community.
Outdoor Recreation Community	GRP-REC	A group made up of stakeholders explicitly stating they are representing an outdoor recreation organization (hunting, fishing, hiking), and those whose statements tacitly indicate a strong and priority affiliation with the outdoor recreation community.
Government Community	GRP-GOV	A group made up of stakeholders explicitly stating they are politicians, or work in a government agency, and those whose statements tacitly indicate a strong and priority affiliation with the government community. This includes affiliation with government conservation entities.
Conservation Community	GRP-CON	A group made up of stakeholders explicitly stating they are conservation scientists or represent a conservation organization, and those whose statements tacitly indicate a strong and priority affiliation with the conservation community. This excludes anyone working for a government conservation agency.
Development Community	GRP-DEV	A group made up of stakeholders who are landowners; either land holding companies (investors), or community developers.
Municipal Community	GRP-MUN	A group of stakeholders engaged in municipal planning for cities, towns or unincorporated areas. This can include municipal development staff, transportation planners, engineers, parks and rec staff or other planning staff that might define land use in a municipality.
Other	GRP-OTH	Stakeholder does not explicitly indicate or tacitly indicate a strong and priority affiliation with ranching/farming, outdoor recreation, government, or conservation community.

## CODING PROTOCOL

### Coding Protocol: METAPHOR

We are following Steger's (2007) three-step metaphor analysis process involving 1.) multiple coding reviews to identify metaphors and identification of outstanding metaphors utilizing repetition to identify metaphors used multiple times, 2.) utilization of constant comparison to identify alternative contexts in which metaphors are used, 3.) examination of the metaphors in the context of the individual comprehension of the metaphor, the individual's background, what the metaphor's use might reveal about the individual, and consideration of the metaphor in the environment in which it was used (Steger 2007).

- For the metaphor coding pass, code for metaphor, simile, metonymy and synecdoche.
- Read the codes for these constructs in the codebook and consult the PI for clarification on any codes, or differences between them (differences are sometimes subtle).
- Highlight all metaphor in YELLOW.
- Underline any simile (any simile will also already be highlighted yellow as similes are a type of metaphor) and write “SIM” in the right margin of the line the simile appears in.
- Highlight metonymy in PINK.
- Highlight synecdoche in BLUE.
- We are coding metaphor at the sentence level. When a code needs highlighting, highlight the full sentence.
- Use sticky flags to highlight instances of gross exaggeration that do not seem to fit into an established coding category.
- Use sticky flags to highlight analogical arguments.
- Use sticky flags to highlight any questionable statements that we are not able to categorize as a given construct according to the codebook parameters.
- Note: Specific types of metaphor are identified in the codebook. We do not need to identify the type of metaphor we find. The types of metaphor are identified in the codebook only to help recognize a metaphor when found.

<b>Mnemonic</b>	MET
Short Description	Metaphor
Detailed Description	A trope or figure of speech in which a word or phrase literally denotes one kind of object or idea used in place of another to suggest a likeness or analogy between them, <i>transferring the qualities</i> of one onto the other explicitly or tacitly, <i>or compares</i> the likeness of one kind of object or idea with another without actually ascribing the qualities of one onto the other.
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Statement contains a tenor (topic) and a vehicle (the image or construct that carries the transfer of qualities).</li> <li>• Statement consists of two or more conceptual domains in which one domain is understood in terms of the other.</li> <li>• Metaphoric synecdoche and metaphoric metonymy.</li> <li>• Absolute metaphors: statements in which there is absolutely no connection between the subject and the metaphor.</li> <li>• Conventional metaphors: statements that leap beyond the rational to say something <i>is</i> what it materially is not or compare something that is with what it materially is not.</li> <li>• Idioms that cannot be translated literally. These include opaque idioms with a literal meaning not at all related to the meaning of the expression and transparent idioms that have elements of transferable meaning. Idioms include common expressions particular to a culture or a region.</li> <li>• Dead metaphors: figures of speech overused to the degree that they have lost their original meaning.</li> </ul> <p>Figurative clichés that do not have a literal meaning, literal clichés that can be translated accurately into another language, and idiomatic clichés.</p> <ul style="list-style-type: none"> <li>• Personification of non-human animals, other living things or non-living objects, including transfer of “human qualities” onto animals.*</li> <li>• Animalization: transfer of non-human animal qualities onto the human.*</li> <li>• Simileic statements comparing one thing to another using terms such as “like” or “as”.</li> <li>• Metaphoric analogical statements that draw a simple comparison but do not present an analogical argument.</li> <li>• Conceptual metaphors: a metaphor or comparison in which one idea or conceptual domain is understood as another.</li> <li>• Root metaphors: comprehensive organizing analogies that help make sense of the world.</li> <li>• Submerged metaphors: statements in which one thing is implied rather than stated explicitly.</li> <li>• Visual metaphors: representation of one thing or idea by way of a visual image.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Metonymy: The substitution of the name of an attribute or adjunct for that of the thing meant.</li> <li>• Synecdoche: Use of a reference of a part of something to mean the whole or the whole of something to mean the part.</li> <li>• Analogical statements that present a logical argument.</li> </ul>
Typical Exemplars	<p>Eagles are my brothers. (personification)</p> <p>Mother Nature keeps the balance. (root metaphor/personification)</p> <p>My cat is like my sister. (simile)</p> <p>It’s as if the government is parenting us. (metaphoric analogy)</p>

	His truck has a three in the tree. (idiomatic) This whole thing is a waste of time. (conceptual) Ranchers are fighting for their lives. (conceptual) The earth is our mother. (root/personification)
Atypical Exemplars	The government sic'd the dogs on us. (submerged) Jazz has a special place in my heart. (dead metaphor/cliché) They took forever to arrive. (submerged/conceptual) The sun was a ball of fire. (visual) It was raining cats and dogs. (dead metaphor/absolute/idiom) I smell a rat. (dead metaphor/cliché) The summer heat was beastly. (submerged) They should lay their cards on the table. (dead metaphor/idiom) That's a hard act to follow. (dead metaphor/cliché) Follow the money trail. (idiom) The cow kicked the bucket. (dead metaphor/cliché) I am sick and tired of your lies. (dead metaphor) The deer murdered my roses. (submerged/personification)
Close but no	I was raised in the Land of Enchantment. (metonymy) Wolves should roam free in the Blue. (metonymy) New Orleans is terrified of hurricanes. (synecdoche/personification) America needs coal. (synecdoche) We need more boots on the ground. (synecdoche) Just as a sword is the weapon of a warrior, a pen is the weapon of a writer. (logical analogy) I was drinking a pop. (metonymy)

\*Note: Personification and animalization are murky areas, as qualities and capacities historically reserved for the human are now recognized to varying degrees in the broader animal kingdom. Conversely, qualities historically considered non-human or suppressed in the human are being more broadly recognized within the human species. The boundaries between the human and non-human animals are contested, so there is no consensus on what qualities or capacities are reserved for humans or non-human animals. Perspectives on human-animal separation are important to this research. Therefore, highlight these transfers as metaphoric, even if they may be literal (depending on the perspective of the speaker). For example, “The bird was caring for her loved ones” is a transfer of the capacity to love (historically reserved for the human) onto an animal. Regardless of whether a bird has the capacity to love, this statement is meaningful to this research, and the PI will examine and analyze these statements in context. Personification can also be the transfer of human qualities to non-animal life (i.e. plants, trees, landscapes or Earth) or to inanimate objects.

<b>Mnemonic</b>	SIM
Short Description	Simile
Detailed Description	Simile is a type of metaphor. Similes <i>compare the qualities</i> of something to something else specifically through using the words “like” or “as”.
Inclusion Criteria	Uses words “like” or “as” for comparison. Statement contains a tenor (topic and a vehicle). Statement consists of two or more conceptual domains in which one domain is understood in terms of the other. The topic and vehicle are of separate domains.
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Metaphoric statements that directly transfer qualities from the vehicle to the tenor without using “like” or “as” statements.</li> <li>• Metonymy: The substitution of the name of an attribute or adjunct for that of the thing meant.</li> <li>• Synecdoche: Use of a reference of a part of something to mean the whole or the whole of something to mean the part.</li> <li>• Analogical statements that present a logical argument.</li> <li>• Comparisons not transferring qualities clearly from one domain to another.</li> </ul>
Typical Exemplars	I was white as a ghost. I’ve been working like a dog. The gym was hot as hell. I am free as a bird. His look was cold as ice.
Atypical Exemplars	He looked like death. Wolves steal like criminals. It’s as if the government is parenting us. (metaphoric analogy)
Close but no	Crows are criminals. Weeding my garden is a constant battle. Ranchers and farmers use resources just like miners. (logical argument) We are at ground zero of wolf reintroduction. It was horrible as anything I have ever seen. (no specific transfer from another domain) It was like they just didn’t care. The desert is a wasteland.

<b>Mnemonic</b>	METY
Short Description	Metonymy
Detailed Description	The substitution of the name of an attribute or adjunct for that of the thing meant. For example, substituting “Oval Office” for power or function of the U.S. President.
Inclusion Criteria	Statements that replace an idiomatic term for another. Statements that contain only one conceptual domain and the connection between the two terms exist within one domain.
Exclusion Criteria	Synecdoche, as previously noted. Metonymy embedded in metaphor All examples of metaphor described in the Metaphor code.
Typical Exemplars	I have lived all my life in the Land of Enchantment. Wolves have returned to the Blue. The feds are not using good science.
Atypical Exemplars	The wolf is all mouth. The suits are coming to town. The bulldozer took over the meeting. We are at ground zero of wolf reintroduction. We were out on the FAIR.
Close but no	Environmentalists are just shooting their mouths off. (metaphoric synecdoche) The gun fell into enemy hands. (metaphoric synecdoche) They just want to line their pockets. (metaphoric synecdoche) You tree huggers don’t understand what it is like to live here. (metaphoric metonymy)



<b>Mnemonic</b>	SYN
Short Description	Synecdoche
Detailed Description	Use of a reference of a part of something to mean the whole or the whole of something to mean the part. For example, “all hands on deck” refers to all entire crewmembers on deck, not just the hands. An example of the reverse is to refer to the United States as “America” when in America is the literal reference for North and South American continents and not just the U.S.
Inclusion Criteria	Statements that reference a part as the whole of something. Statements that reference the whole as a part of something. Statements that contain only one conceptual domain. Includes statements that refer to clothing or apparatus of an individual.
Exclusion Criteria	Metonymy, as previously noted. Synecdoche embedded in metaphor. All examples of metaphor described in the metaphor code.
Typical Exemplars	We need more boots on the ground. We need all hands on deck. They just want to line their pockets. The gun fell into enemy hands.
Atypical Exemplars	Those collars are hunting my cattle. He put his hat in the ring.
Close but no	I have lived all my life in the Land of Enchantment. (metonymy) Wolves have returned to the Blue. (metonymy) The feds are not using good science. (metonymy) The beast is roaming the forest. (metonymy) Environmentalists are just shooting their mouths off. (metaphoric synecdoche) The gun fell into enemy hands. (metaphoric synecdoche) They just want to line their pockets. (metaphoric synecdoche) The forest is full of ravaging mouths. (metaphoric synecdoche)

- Pay attention also to instances of gross exaggeration that may not fall into one of the above coding categories, and flag those when found.
- Pay attention to any analogical statements that present a logical argument, and flag those when found.

### Coding Protocol: EMOTION

- For the first pass of emotion coding, we are coding for top-level emotion only. In this pass, we are not coding to identify specific emotions. We are coding to identify the presence of emotion.
- Read the code for the emotion construct in the codebook and consult the PI for clarification on any codes, or differences between them (differences are sometimes subtle).
- Identify whether the emotion is felt, observed or historically recounted – write this in the margin as EMO-F, EMO-O, and EMO H respectively.
- Highlight all emotion in ORANGE.
- Code emotion at the statement level.
- If an emotional statement is already highlighted in another color for another code, put the orange highlight below the line.
- Use sticky flags to page mark any questionable statements that are not categorized as a given construct according to the codebook parameters.

### Coding Protocol: SPECIFIC EMOTIONS

- There are estimated to be over 34,000 different emotions, but it is theorized that there are five to eight emotions that all mammals with a limbic system are capable of exhibiting (Ekman 1992; Plutchik 2001). For the specific emotions coding pass, code for eight primary emotions and intensity degrees of these emotions (emotions defined by their valance in relation to the primary emotion), as theorized by Plutchik (2001). Each of these emotions has a positive or negative sentiment as identified by Plutchik (Plutchik 2001). Below these primary emotions are in bold with degrees of extremity on either side indicated in plain text outside the brackets:

Primary (basic) emotions and their polars:

1. Annoyance] **Anger** [Rage
2. Interest] **Anticipation** [Vigilance
3. Serenity] **Joy** [Ecstasy
4. Acceptance] **Trust** [Admiration
5. Apprehension] **Fear** [Terror
6. Distraction] **Surprise** [Amazement
7. Pensiveness] **Sadness** [Grief
8. Boredom] **Disgust** [Loathing

- Additionally, code for eight dyadic emotions (mixes of two primary emotions) as theorized by Plutchik (Plutchik 2001):

Primary Emotional Dyads:

1. **Contempt**: Mix of Anger and Disgust
2. **Aggressiveness**: Mix of Anger and Anticipation
3. **Optimism**: Mix of Anticipation and Joy
4. **Love**: Mix of Joy and Trust
5. **Submission**: Mix of Trust and Fear
6. **Awe**: Mix of Fear and Surprise
7. **Disapproval**: Mix of Surprise and Sadness
8. **Remorse**: Mix of Sadness and Disgust

- Note: Plutchik also identifies secondary dyads (which are sometimes felt) and tertiary dyads (which are seldom felt) in contrast to primary dyads, which he theorized are often felt (Plutchik 2001). This codebook does not set out definitions of these sometimes felt or seldom-felt emotions. However, if an emotion is encountered that is distinctly a secondary or tertiary dyad, please flag it as such. Following are the secondary and tertiary dyadic emotions as defined by Plutchik (2001):

Secondary Dyadic Emotions (emotional mixes):

1. **Guilt:** Mix of Joy and Fear
2. **Curiosity:** Mix of Trust and Surprise
3. **Despair:** Mix of Fear and Sadness
4. **Unbelief:** Mix of Surprise and Disgust
5. **Envy:** Mix of Sadness and Anger
6. **Cynicism:** Mix of Disgust and Anticipation
7. **Pride:** Mix of Anger and Joy
8. **Fatalism:** Mix of Anticipation and Trust

Tertiary Dyadic Emotions (emotional mixes):

9. **Delight:** Mix of Joy and Surprise
10. **Sentimentality:** Mix of Trust and Sadness
11. **Shame:** Mix of Fear and Disgust
12. **Outrage:** Mix of Surprise and Anger
13. **Pessimism:** Mix of Sadness and Anticipation
14. **Morbidness:** Mix of Disgust and Joy
15. **Dominance:** Mix of Anger and Trust
16. **Anxiety:** Mix of Anticipation and Fear

- The primary emotions, their polars, and the secondary (mixed) emotions are illustrated in the emotion wheel. Tertiary emotions are not shown on the wheel. (Figure A1.1).
- Read the codes for each of the universal emotion constructs in the codebook and consult the PI for clarification on any codes, or differences between them (differences are sometimes subtle). Note that the sentiment is indicated as N for negative and P for positive in the code mnemonics for each of the primary codes.
- Review the orange highlighted statements in the source document. For each of these statements, assign the code for the specific emotion in the margin to the right of the statement. Keep in mind, we are looking for all degrees of the primary emotions, not just the core, but if a degree of a primary emotion is identified, code it first as the primary and then parenthetically note the degree. For example, the notation for “grief” would be SAD (grief).
- If an emotional statement is encountered that is unclassifiable, add the best-fitting mnemonic, and add a question mark after the mnemonic. Use sticky flags to page mark any questionable statements that are not categorized as a given construct according to the codebook parameters. If in this pass an emotional statement is encountered not previously recognized on the top-level emotion pass, highlight the statement in ORANGE as with the pass for top-level emotion coding.
- Definitions of emotions were formed by PI, synthesizing and expanding definitions extracted from Merriam-webster.com and Dictionary.com (Merriam-Webster 2018; Dictionary.com 2019).

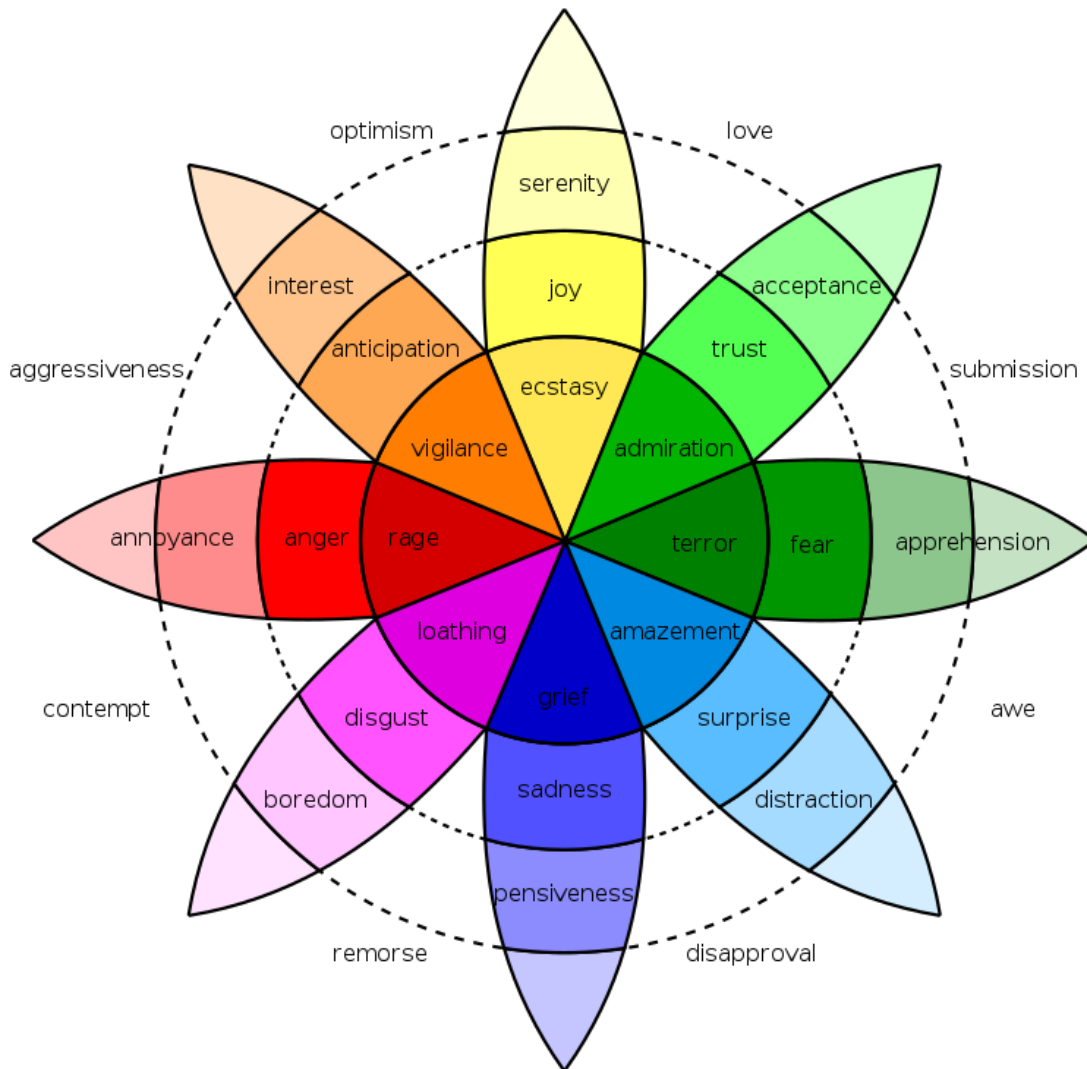


Figure A 1.1  
Robert Plutchik's emotion wheel (Plutchik 2001)

<b>Mnemonic</b>	EMO
Short Description	Emotion
Detailed Description	An affective state of consciousness deriving from one's circumstances, mood or relationships with others in which joy, sorrow, fear, hate, or the like, is experienced, as distinguished from cognitive and volitional states of consciousness.
Inclusion Criteria	Any strong agitation of feelings such as those listed above either felt, observed or historically recounted. A mental state that uplifts or weighs on one's mood to any degree. Gross exaggerations of physical states or circumstances relating to emotion. Expressions of affective pain such as heartache. Expressions of affective attitude such as use of expletives. Expressions of affective response to physical pain.
Exclusion Criteria	Literal or metaphorical expressions of physical feelings such as physical pain not related to a psychological state. Logical thoughts, ideas or conclusions Hyperbolic references that are non-emotional references to an emotion
Typical Exemplars	I was crabby all day. I just felt like crying. I felt like I was going to die. I was frustrated that my nose would not stop running. Those bastards were so late there was nothing left when they got here.
Atypical Exemplars	I was heartbroken I would miss the game. I didn't feel up to going out. I had no desire to do anything. My heart is aching over the loss. I was so sad, I felt like I was going to die.
Close but no	I was totally run down. I felt weak. I was tired. I didn't want to move. I had shooting pains in my foot.

emonic	O-ANGER-N
rt Description	er
ailed Description	ental state arousing one's mood to a strong feeling of displeasure or gonism, annoyance, hostility. rs: annoyance - rage iment: negative
usion Criteria	ly explicit or tacit expression of feelings described above, including but not ted to frustration, wrath and fury. ly explicit or tacit expression of feelings described between the above polars. egative sentiments expressed from feelings described above. e of expletives. pressions of a physical response to feelings described above, in particular any essions of violence. pressions of a desire for revenge or punishment. pressions of vengeance or justice by a higher than human force. criptions of behavioral reactions to feelings described above.
usion Criteria	teral or metaphorical expressions of physical feelings not related to a hological state as described above. gical thoughts, ideas or conclusions. yperbolic references that are non-emotional references to an emotion. pressions of disgust, loathing or boredom. pressions of interest, anticipation, or vigilance. pressions of terror, fear, or apprehension. pressions of grief, sadness, or pensiveness.
ical Exemplars	se bastards were so late there was nothing left when they got here. blood was boiling. s process is infuriating.
opical Exemplars	slammed the door and left. day you will get what you deserve. will see to it that justice is done. s so mad I felt like would lose control.
se but no	s anxiously vigilant. red the wrath of the government. s disgusted by what I saw in the field. ed all night long. s terrified of what might happen.

<b>Mnemonic</b>	EMO-ANT-P
Short Description	Anticipation
Detailed Description	A mental state arousing one's mood to a <i>positive</i> feeling of foreseeing, predicting or expecting something pleasurable. Polars: interest - vigilance Sentiment: positive
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of a desire for knowledge, waiting for something or someone, passing time or keeping busy while waiting.</li> <li>• Expressions of looking forward to an event, an arrival, a return to something from the past.</li> <li>• Descriptions of behavioral reactions to feelings described above.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of joy, ecstasy or serenity.</li> <li>• Expressions of admiration, trust or acceptance.</li> <li>• Expressions of amazement, surprise or distraction.</li> <li>• Expression of fear or anxiety-based anticipation.</li> <li>• Anticipation as a music theory term for the introduction in a composition of part of a chord, which is about to follow in full.</li> </ul>
Typical Exemplars	<p>I look forward to hearing the howls of wolves in the wilderness.</p> <p>I checked my mail every day for the letter of acceptance.</p> <p>I sat by my phone all day.</p> <p>I know this is going to work out well.</p> <p>This desert wasteland will soon be an oasis.</p>
Atypical Exemplars	<p>I was ready for a great day.</p> <p>The frost told me winter was coming.</p> <p>I waited for a signal.</p>
Close but no	<p>I was anxiously vigilant.</p> <p>I am prepared for the worst.</p> <p>I sleep with my gun under my pillow.</p> <p>I couldn't wait for it to be over.</p> <p>I thought they would never show up.</p> <p>I knew that it was going to be a problem.</p> <p>I was awake all night, worried that something would happen.</p>

<b>Mnemonic</b>	EMO-JOY-P
Short Description	Joy
Detailed Description	A mental state arousing one's mood to a positive feeling of great pleasure and happiness, felicity, blissfulness, delight, beatitude, or glory. Often evoked by wellbeing, success, or good fortune or by the actuality or prospect of possessing what one desires. Polars: serenity – ecstasy Sentiment: positive
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of spiritual feelings of exaltation or nirvana.</li> <li>• Expressions of feelings of love or specialness.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of admiration, trust or acceptance.</li> <li>• Expressions of amazement, surprise or distraction.</li> <li>• Expressions of anticipation.</li> <li>• Positive expressions stemming from logical conclusions.</li> <li>• Non-emotional references to special services or special needs.</li> </ul>
Typical Exemplars	<p>I am thrilled at the prospect of hearing wolves howl in the forest.</p> <p>I love being out in the woods.</p> <p>The sound of a child's laughter warms my heart.</p> <p>It made me really happy when I received the flowers.</p>
Atypical Exemplars	<p>Hiking in the desert is uplifting.</p> <p>The glorious sunrise made me melt.</p> <p>The flowers made me feel special.</p>
Close but no	<p>I feel the expanded wolf range is a positive step.</p> <p>I have high hopes for the return of the wolf.</p> <p>I'd be a lot happier if I knew my family was safe.</p> <p>She taught special education.</p> <p>I'm in love with this new shampoo.</p>



<b>Mnemonic</b>	EMO-TRUST-P
Short Description	Trust
Detailed Description	A mental state arousing one's mood to a positive feeling of reliance on the character, ability, strength, or truth of someone or something. Polars: admiration – acceptance Sentiment: positive
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of integrity or reliability.</li> <li>• Expressions of faith in more than or higher than human forces such as God or Nature.</li> <li>• Expressions of trust in people, animals, organizations, institutions, processes or epistemologies such as science or religion.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of amazement, surprise or distraction.</li> <li>• Expressions of anticipation.</li> <li>• Expressions of joy, ecstasy or serenity.</li> <li>• Expressions of distrust.</li> </ul>
Typical Exemplars	I knew she would be safe. God will see to it that things work out. The livestock council has our best interests in mind. I felt confident in the plan.
Atypical Exemplars	My neighbor is a stand-up guy. The game and fish guy was reliable. This program is based on good science. The City has always been supportive of development.
Close but no	Wolves are sneaky. FWS needs to stop lying to us. You are just manipulating the system. I trust this letter finds you in good health.

<b>Mnemonic</b>	EMO-SUR- P and N
Short Description	Surprise
Detailed Description	A mental state arousing one's mood to a positive or negative feeling of an unexpected or astonishing event, fact, or thing such as a sudden feeling of wonder or astonishment in response to an event that strikes or occurs without warning or a discovery that has been come upon suddenly and unexpectedly. Polars: amazement – distraction Sentiment: positive or negative
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of positive feelings described above.</li> <li>• Any explicit or tacit expression of positive feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of shock of being awestruck.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Negative feelings of being surprised such as being caught off-guard resulting in negative consequences.</li> <li>• Expressions of amazement, surprise or distraction.</li> <li>• Expressions of anticipation.</li> <li>• Expressions of joy, ecstasy or serenity.</li> <li>• Expressions of admiration, trust or acceptance.</li> <li>• Expressions of fear.</li> </ul>
Typical Exemplars	<p>I jumped up when I heard the sound of the dinner bell.  I couldn't believe the amount of snow on the ground that morning.  The lightning struck right next me!  The cyclist I hit came out of nowhere.  When I opened the box, I jumped back when I saw the all the spiders.  The floodwaters took all of us off guard.</p>
Atypical Exemplars	<p>One day I just got a random check in the mail to pay for the damages.  I was surprised she actually showed up.  I felt a sudden chill when I entered the room.  I was amazed I made it to the show on time.  Bill was reeling after Ted suddenly broke up with him.</p>
Close but no	<p>I wondered why I was not selected.  I jumped at the chance to participate.</p>

<b>Mnemonic</b>	EMO-FEAR-N
Short Description	Fear
Detailed Description	A mental state arousing one's mood to a negative feeling of unpleasantness or unsettledness caused by the belief that someone or something is dangerous, likely to cause physical or emotional pain, or a threat. Polars: terror – apprehension Sentiment: negative
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of distrust in people, animals, organizations or institutions.</li> <li>• Expressions of anxiety, worry, or apprehension toward potential events or states.</li> <li>• Warnings of imminent danger.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of disgust, loathing or boredom.</li> <li>• Expressions of interest, anticipation, or vigilance.</li> <li>• Expressions of grief, sadness, or pensiveness.</li> </ul>
Typical Exemplars	Those boys are terrified of the dark. He was screaming for help as he ran from the chasing dog. The facts are being twisted to misrepresent the truth. The sounds of the haunted house made her white as a sheet. We are worried about potential flooding.
Atypical Exemplars	Wolves are sneaky. The government needs to stop lying to us. They never keep their promises. I was anxiously vigilant. I am prepared for the worst. I sleep with my gun under my pillow. I was awake all night worried something would happen. Investors are afraid of losing money. We are worried if we give you a little, you will just ask for more.
Close but no	I fear I have lost all interest in this conversation. I'm afraid I have some disappointing news.

<b>Mnemonic</b>	EMO-SAD-N
Short Description	Sadness
Detailed Description	A mental state arousing one's mood to a negative feeling of unhappiness, especially because something bad has happened; often characterized by feelings of disadvantage, loss, despair, grief, helplessness, disappointment, or sorrow. Polars: pensiveness – grief Sentiment: negative
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of deep or serious, brooding or solemn thought.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of disgust, loathing or boredom.</li> <li>• Sarcastic or cynical references to sadness.</li> <li>• References to depression as a state or mental illness.</li> </ul>
Typical Exemplars	Mary cried when she lost her little lamb. Amy was heartbroken over her husband's affair. Bill was devastated when his rejection letter came from the school.
Atypical Exemplars	The mood was somber as the death was announced. He was miserable over the events of the day. I was crushed when I saw the damage done to the trails.
Close but no	Sandy was hopelessly devoted to Danny. You lost, boo-hoo. Don't be such a cry baby. Sadness is cathartic. Most people don't know the difference between sadness and depression.

<b>Mnemonic</b>	EMO-DISG-N
Short Description	Disgust
Detailed Description	A mental state arousing one's mood to a negative feeling of revulsion or strong disapproval, aroused by something unpleasant, distasteful or offensive. Polars: boredom – loathing Sentiment: negative
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Any explicit or tacit expression of feelings described above.</li> <li>• Any explicit or tacit expression of feelings described between the above polars.</li> <li>• Statements tacitly indicative of feelings described above.</li> <li>• Expressions of a physical response to feelings described above.</li> <li>• Expressions of being fed up, sick and tired, disillusioned, or disappointed.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Literal or metaphorical expressions of physical feelings not related to a psychological state as described above.</li> <li>• Logical thoughts, ideas or conclusions.</li> <li>• Hyperbolic references that are non-emotional references to an emotion.</li> <li>• Expressions of terror, fear, or apprehension.</li> <li>• Expressions of grief, sadness, or pensiveness.</li> <li>• Expressions of a desire for revenge or punishment.</li> <li>• Expressions of vengeance or justice by a higher than human force.</li> <li>• Expressions of antagonism, annoyance, hostility.</li> </ul>
Typical Exemplars	<p>I am offended that you would treat me that way.</p> <p>I am sick of your lies.</p> <p>I have had enough of this behavior.</p> <p>The horrible food made him cringe.</p>
Atypical Exemplars	<p>The typing of the long transcripts was tedious work.</p> <p>She was loath to admit her mistakes.</p>
Close but no	<p>He slammed the door and left.</p> <p>One day you will get what you deserve.</p> <p>God will see to it that justice is done.</p>

<b>Primary Emotional Dyads (D1)</b>	<b>Mnemonic</b>	<b>Definition/Description</b>
Contempt	CTMP-n	Mix of Anger and Disgust: The act of despising; the state of mind of one who despises; lack of respect or reverence for something; a feeling of disrespect or disapproval of something or someone.
Aggressiveness	AGG-n	Mix of Anger and Anticipation: A state of being tending toward or exhibiting aggression or marked by combative readiness, by obtrusive energy and self-assertiveness, or by driving forceful energy or initiative.
Optimism	OPT-p	Mix of Anticipation and Joy: An inclination to put the most favorable construction upon actions and events or to anticipate the best possible outcome; Expressions of hope.
Love	LOVE-p	Mix of Joy and Trust: A strong affection for another arising out of kinship or personal ties; attraction based on sexual desire; affection and tenderness felt by lovers; affection based on admiration, benevolence, or common interests.
Submission	SUB-n/p	Mix of Trust and Fear: A condition of being submissive, humble, or compliant; an act of submitting to the authority or control of another.
Awe	AWE-p	Mix of Fear and Surprise: An emotion variously combining dread, veneration (inspired by the dignity, wisdom or talent of another); wonder that is inspired by authority or by the sacred or sublime.
Disapproval	DIS-n	Mix of Surprise and Sadness: The act or state of disapproving; the state of being disapproved; unfavorable judgment of something; condemnation.
Remorse	REM-n	Mix of Sadness and Disgust: A gnawing distress arising from a sense of guilt for past wrongs; self-reproach or disappointment arising from unmet expectations of self or others.

Coding protocol: NARRATIVE

- For the narrative coding pass, code to identify explicit or tacit references to media and social and cultural narrative.
- Code for narrative inductively; the PI has not provided codes or existing narratives to look for.
- For narrative coding, code at the document level. If a narrative in a document is seen more than once, only code it once per narrative theme.
- Many metaphors are narrative references, so it is likely to find narrative text already highlighted in yellow. Therefore, underline all narrative reference with green highlighter and in the margin to the right of the sentence note “NAR”, note the type of narrative (media (M) or social/cultural (S/C) and include a brief reference to the narrative identified.
  - Example 1: If a speaker references the “Big Bad Wolf”, note “N-MEDIA: Little Red Riding Hood /The Three Little Pigs”.
  - Example 2: If a speaker states “nature is sacred”, note “N-SC-NAT” and “N-SC-SPR”
- Use sticky flags to page mark any questionable statements that may be a narrative reference.
- Feel free to make pencil notes in the margins as needed.
- Look for mention of or reference to narratives that are exemplary of particular narratives and flag those

<b>Mnemonic</b>	N-MEDIA
Short Description	Media Narrative
Detailed Description	For the purpose of this coding, we restrict the definition of media narrative to story presented in literature, film, television, music, and media games.
Inclusion Criteria	<ul style="list-style-type: none"> <li>• Allusion or explicit reference to children’s stories, fables, fairy tales, nursery rhymes, novels, short stories, poetry, plays, and memoirs.</li> <li>• Allusion or explicit reference to films, television shows.</li> <li>• Allusion or explicit reference to specific religious texts.</li> </ul>
Exclusion Criteria	<ul style="list-style-type: none"> <li>• Narrative introduced in newspapers, magazines, or websites.</li> <li>• Conceptual narratives embedded in social structure such as religion.</li> <li>• Conceptual narratives embedded in culture.</li> <li>• Narratives about performance or event such as sports, war, disaster.</li> <li>• Narratives about traditions or practices.</li> <li>• References to science or scientific studies.</li> </ul>
Typical Exemplars	Don’t be a Scrooge. (literary) He is carrying the weight of the world. (literary) His mom is not at all like Mrs. Cleaver. (TV)
Atypical Exemplars	I can’t bear the thought of wolves howling at the full moon. (literary/film) He has the faith of Moses (biblical)
Close but no	God intended for men to marry women. (worldview) This article analyzes how video games affect violence in society. (science) He is wealthy because he benefits from white privilege. (social)

<b>Mnemonic</b>	N-SC
<b>Short Description</b>	Social and Cultural Narrative
<b>Detailed Description</b>	Social and cultural narratives are ideas or stories in social or cultural operation. They can be influential to social or cultural rules and norms. Sometimes, but not always, these narratives become embedded in social structure such as law and social services.
<b>Inclusion Criteria</b>	<ul style="list-style-type: none"> <li>• Narrative introduced in newspapers, magazines, or websites.</li> <li>• Conceptual narratives embedded in social structure such as religion.</li> <li>• Conceptual narratives embedded in culture.</li> </ul>
<b>Exclusion Criteria</b>	<ul style="list-style-type: none"> <li>• References to children’s stories, fables, fairy tales, nursery rhymes, novels, short stories, poetry, plays, and memoirs.</li> <li>• References to films, television shows.</li> <li>• References to specific religious texts.</li> </ul>
<b>Typical Exemplars</b>	<p>God intended for men to marry women. (worldview)</p> <p>This article analyzes how video games affect violence in society. (science)</p> <p>He is wealthy because he benefits from white privilege. (social)</p> <p>Wild animals don’t belong anywhere near people. (worldview)</p>
<b>Atypical Exemplars</b>	<p>Dark alleys are dangerous places. (social)</p> <p>The country should take care of its people. (power)</p> <p>We are locked and loaded. (battle)</p> <p>We need to look objectively at the evidence. (science)</p>
<b>Close but no</b>	<p>This plan is a guaranteed home run. (sports metaphor but not narrative)</p> <p>Don’t be such a Cassandra. (literary)</p> <p>Jesus cared about the weak and the poor. (literary/biblical)</p>



APPENDIX B  
CODING PROCESS

## B.1 Coding overview

Chapter 7 presents an analysis of Mexican gray wolf reintroduction into the U.S. southwest. The analysis involved qualitative coding to identify the aspects of each IE quadrant (perspective) that are explicitly stated or implicitly revealed in the statements of stakeholders in the case study.<sup>242</sup> Coding was followed by a qualitative analyses identifying links between the four perspectives; the mutual influence that individual (experiential) and collective (cultural) perspectives have on actions and materialities (behavioral and observational) and structures (systems) perspectives according to the AQAL model. The scale of the analysis for the case study is the individual.

Saldaña (2009) defines a code in qualitative text analysis as “most often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute (Saldaña 2013, 3).” The use of human (verses computerized) coding is needed to identify codes for complex constructs emerging in this research. For example, emotions including trust, fear, anger, indignation, or negation can be embedded in metaphor that computer coding would not consistently recognize.

Coding of case study texts involved multiple coding passes of the statement/interview transcripts and thematic grouping of codes. First, aspects of the individual and collective exterior perspectives were identified by the PI through stakeholder reporting and references to the literature review of the case study. The PI then grouped these aspects into relevant themes. Second, aspects of the individual and collective interior perspectives were identified through explicit self-reporting by stakeholders, and implicit expression deduced by 1.) use of metaphor, and 2.) emotive expression. The PI then analyzed the interior aspects for emergent themes. Finally, texts were then analyzed for the presence of influential narrative; explicit or implied

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<sup>242</sup> This comprised an analysis of public statements made by stakeholders.

references to media narrative (stories in literature, art, music or other media) or social narrative (ideas or stories in social or cultural operation that can influence social or cultural rules and norms, or become embedded in social structure such as law and social services).

## B.2 Justification for Multiple Coders

The PI independently coded the texts for individual and collective exterior aspects. However, coding for subtle or complex constructs such as metaphor, emotion and narrative (revealing of individual and collective interiors) can be a highly subjective process. Utilizing two or more coders supports the validity of analyses as it demonstrates that the constructs identified are more broadly meaningful and not identified based on individual researcher bias.

Agreement (and disagreement) among coders can help identify the core-periphery structures in the data. Codes capture essence of the data, and when codes cluster in patterns they can reveal dominant constructs and overlapping peripheries, thereby facilitating analysis of connections (Saldaña 2013). According to Ryan (1999), in some cases themes with strong coder agreement can emerge as particularly central, while those with less agreement can appear more loosely linked (Ryan 1999). The analyses of the case study in this dissertation specifically looked for typicality of themes and cross-cutting themes. Due to the high degree of subjectivity in both identification of metaphor and emotion and linking of cross cutting themes, the PI utilized a second coder referencing a shared codebook for metaphor and emotion. Use of a second coder for coding the metaphor, emotion, and narrative coding broadened the ability for the PI to interpret and understand the data, and prepare a richer analysis, thereby strengthening the findings and the validity of the research.

To establish interrater reliability, each coder coded a sample of individual transcripts from the case study (Mexican wolf hearing statements). Coded segments were reviewed against a codebook prepared independently by the PI (Appendix 5). Instances of coding agreement and

discrepancy were discussed and compared to code criteria. Codebook modifications were made when discussion indicated a need for code clarification. Following this, the two coders independently coded an additional sample of individual statements which were tested for interrater reliability using Cohen's Kappa Coefficient. Interrater reliability was tested for metaphor, synecdoche, metonymy, presence of emotion, and the eight basic emotions and eight primary emotional mixes as defined by Plutchik (Plutchik 2001).

### B.3 Structural Coding

Individual statements and interview transcripts were saved as individual documents and coded *a priori* with gender identifiers in the document name (Female [0] and Male [1]), and a numerical code corresponding to the speaker (stakeholder) name. A number of demographic structural codes were assigned at the level of the individual statement a stakeholder did not clearly fit into a category for a given code, the statement was coded as "Unknown" for that particular code, such that every stakeholder statement was assigned a code for each structural code category. No stakeholder was assigned more than one category for each code.

Individual statements and interview transcripts were saved as individual documents and coded *a priori* with gender identifiers in the document name and a numerical code corresponding to the speaker (stakeholder) name.<sup>243</sup> A number of structural codes were assigned at the level of the individual statement. Codes were assigned to indicate representation (speaking on behalf of self/family or others), profession (knowledge domain), and issue position (pro- or anti- Mexican wolf recovery). Because this research concerns differences in perspectives amongst particular

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<sup>243</sup> Statements analyzed for the Mexican wolf case study were public statements later posted publicly on FWF website, thus speaker identities are public information. However, a numerical code was utilized for the purposes of protecting speakers from being specifically named in research publications utilizing this data. Gender is coded as Female [0] and Male [1], and hearing location is coded as Pinetop [PT] or Truth or Consequences [TC]. These codes are used throughout this paper and in associated addenda to reference particular speaker statements.

stakeholders relative to livelihood, structural codes were assigned to each speaker to indicate formal or informal group affiliation with one of the following livelihood groups (LGs): 1.) Agriculture, 2.) Recreation, 3.) Government, 4.) Conservation, or 5.) Other. A residence code was assigned to indicate each speaker's residence or work base (RWB) according to each the speaker's self-disclosure of residence. Work base was used as speaker residence if the speaker was representing an organization. If a speaker did not clearly fit into a category for a given code, the statement was coded as "Unknown" for that particular code, such that each speaker statement was assigned a code for each structural code category. No speaker was assigned more than one category for each code.

#### B.4 Metaphor Coding

Beyond the understanding of metaphor as a device for understanding one thing in terms of another, there is no agreement amongst theorists and researchers on what classifies as metaphor (Cameron and Low 1999; Steen 2010). For the purposes of this research, metaphor is defined as figures of speech which are analogical by way of applying the attributes of a vehicle (the object whose attributes are borrowed) to a tenor (the subject to which the attributes of the vehicle are applied).

Coding for analogy (metaphor) was done using line-by-line coding at the sentence level. Coders utilized an inductive approach to identify metaphor using line-by-line coding for analogy within the text of each statement following Steger's (2007) three-step metaphor analysis process involving: 1.) multiple coding reviews to identify metaphors and identification of outstanding metaphors utilizing repetition to identify metaphors used multiple times, 2.) utilization of constant comparison to identify alternative contexts in which metaphors are used, 3.) examination of metaphors in the context of individual comprehension of the metaphor, the individual's

background, what the metaphor's use might reveal about the individual, and consideration of the environment the metaphor was used in (Steger 2007).<sup>244</sup>

The purpose of this coding was to identify conceptual metaphor, metonymy, and synecdoche, which were coded separately. However, in the case where metonymy and synecdoche were embedded in conceptual metaphor, they were coded as metaphor. Simile was also coded separately because it represents a lesser degree of abstraction because a simile compares two constructs using “like” or “as” verses directly transferring the qualities from one construct onto another. This lesser degree of abstraction was considered potentially relevant for the analysis. In accordance with the Praggeljaz Group’s assertion that historical metaphors (archaic metaphors that no longer contrast between contextually appropriate emotion sense and historically older references) are no longer metaphoric (Steen 2010), the PI excluded instances of historical metaphor from the analysis.

## B.5 Emotion Coding

Evaluation of emotion was done in context and with respect to sentiment (positive or negative) and valance (intensity). Transcripts were coded for presence of Plutchik’s (1980) model of eight basic emotions, and their primary mixes (Plutchik 1980), as well as two sentiments: negative and positive (Mohammad and Turney 2010; Mohammad and Turney 2013). Presence of emotion was determined by 1.) Use of emotion words, 2.) Contextual review of emotion words in context, 3.) Explicit statements about emotion, 4.) Contextual review of overall statement or interview. All transcripts were coded at the word, sentence and statement/interview level for presence of emotion.

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<sup>244</sup> For the case study, the environment was a public forum amongst opposing stakeholders.

Statements/interviews were first coded by the PI for emotion at the word level, against a list of known emotion words utilizing the National Research Council Canada (NRC) Word-Emotion Association Lexicon (EmoLex), a list of English words and their associations that correspond to Plutchik's eight basic emotions (Mohammad 2016). A single word can indicate more than one kind of emotion, and context can influence meaning, valence and intensity. Additionally, some emotion words can be used in a sentence and not be indicative of emotion. Therefore, each emotion word was reviewed by the PI in context at the sentence level, and sentences with emotion words were coded according to its associated emotion and sentiment as defined by the EmoLex.

Emotion can be present and not be explicitly stated or described using emotion words (i.e. it could be metaphorically presented, or expressed only in context), and emotion can be expressed at the statement or interview level that is not captured at the sentence or word level. Therefore, two coders reviewed each transcript at the statement/interview level and coded any not otherwise captured emotional statements/interviews for type of emotion, sentiment.<sup>245</sup> Emotions are not mutually exclusive, so some statements/interviews were coded for multiple emotions.

Each statement/interview was coded for explicit expressions of self-reported emotion (i.e. "I am scared.") and explicit expressions of observed emotion or emotion reported of others (i.e. "She looked scared." or "She said she was scared."). Emotions were coded according to the eight different emotions identified by Plutchik as basic or core emotions which have corresponding emotions of greater or lesser valence (for example, annoyance is a lesser degree of anger and rage is a greater degree of anger (Plutchik 1980) (Figure 6.3). Emotions clearly falling into a lesser or great valence emotion than the core were coded accordingly. Some emotions are combinations of

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<sup>245</sup> Statements that utilized emotion words, but in context were not emotional statements were removed from the emotion analysis.

other emotions. For example, contempt is a combination of anger and disgust (Plutchik 1980). These emotions fall between the core emotions at their correspondence valence on the Plutchik emotion wheel (Figure 6.3), and were coded accordingly.

Coding emotion at the word, sentence, statement and interview level with respect to sentiment, valance and mixed emotions allowed for a thorough analysis of the emotion being reported.

### B.6 Narrative Coding

Two coders reviewed the texts at the statement/interview level, to identify the presence of explicit and implicit references to media and social narrative. This was a semi-inductive process and no preassigned codes were provided. The PI is familiar with some of the dominant narratives having done an extensive literature review. The second coder, having significantly less knowledge on the subject matter and social context, provided a more clearly inductive review for themes, theoretically capturing themes the PI may have overlooked due to knowledge bias. The PI grouped coded narrative references thematically.



Table B.1. Inter-rater Reliability

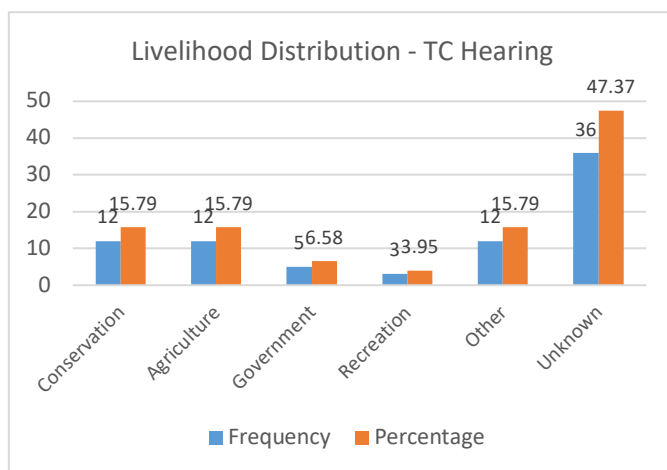
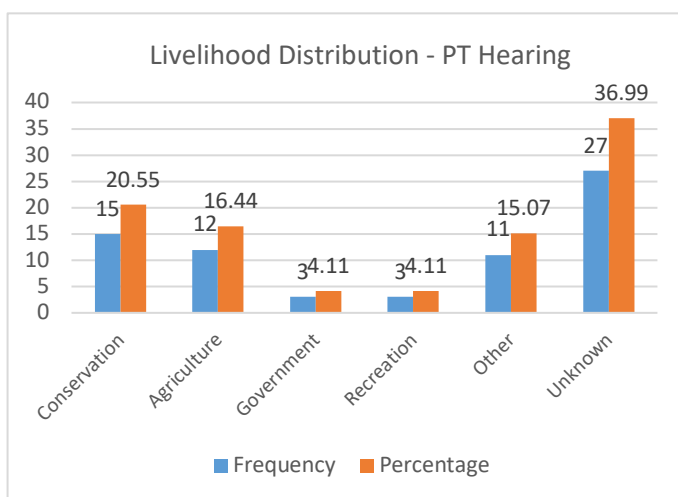
<b>Code</b>	<b>Kappa</b>	<b>SE of Kappa</b>	<b>95% Confidence Interval</b>	<b>Strength of Agreement</b>
Metaphor	0.0874	0.086	.705-1.000	Very good
Simile	1.000	0.000	1.000-1.000	Perfect
Metonymy	1.000	0.000	1.000-1.000	Perfect
Synecdoche	0.785	0.207	0.380-1.000	Good
Emotion (presence of)	1.000	0.000	1.000-1.000	Perfect
Emotion: Annoyance] Anger [Rage	0.839	0.157	0.532-1.000	Very Good
Emotion: Interest] Anticipation [Vigilance	0.839	0.157	0.532-1.000	Very Good
Emotion: Serenity] Joy [Ecstasy	0.785	0.207	0.380-1.000	Good
Emotion: Serenity] Trust [Admiration	0.839	0.157	0.532-1.000	Very Good
Emotion: Apprehension] Fear [Terror	0.839	0.157	0.532-1.000	Very Good
Emotion: Distraction] Surprise [Amazement	1.000	0.000	1.000-1.000	Perfect
Emotion: Pensiveness] Sadness [Grief	0.785	0.207	0.380-1.000	Good
Emotion: Boredom] Disgust [Loathing	0.839	0.157	0.532-1.000	Very Good
Emotion: D-1 Contempt	0.839	0.157	0.532-1.000	Very Good
Emotion: D-1 Aggressiveness	0.839	0.157	0.532-1.000	Very Good
Emotion: D1- Optimism	1.000	0.000	1.000-1.000	Perfect
Emotion: D1- Love	1.000	0.000	1.000-1.000	Perfect
Emotion: D1- Submission	1.000	0.000	1.000-1.000	Perfect
Emotion: D1- Awe	1.000	0.000	1.000-1.000	Perfect
Emotion: D1- Disapproval	0.785	0.207	0.380-1.000	Good
Emotion: D1- Remorse	0.839	0.157	0.532-1.000	Very Good

APPENDIX C

CASE STUDY ISSUE POSITION BY DEMOGRAPHICS

There was a relative balance in attendance and gender at both hearings.<sup>246</sup> Speakers were similarly distributed amongst livelihood groups (LG) at the two hearings, with a slightly higher conservation presence in PT (Figure C.1).

### C.1 Livelihood (LG)



*Figure C.1*

Distribution of speakers according to livelihood.

While it is recognized that speakers may have more than one form of livelihood, speakers were categorized according to their self-disclosed livelihood means.

Those categorized as “Conservation”, “Government”, or “Recreation” stated they worked for or were representing conservation, government or recreation organizations or agencies. Those categorized as “Agriculture” stated they were farmers or livestock owners or worked for or represented an agricultural organization. Speakers in the “Other” category had professions in science, law enforcement, education, business, arts, military and medicine. No assumptions were made on livelihood not explicitly stated. Many speakers did not disclose livelihood, and were

<sup>246</sup> There are 149 speakers total in this study. In Pinetop, AZ there were 73 speakers (37 men and 36 women). In Truth or Consequences, NM there were 76 speakers (45 men and 31 women).

## C.2 Representation

In both hearings, most stakeholders represented themselves (60.3% PT; 64.9% TC). Others represented conservation organizations (23.3% PT; 14.9% TC), agricultural organizations (5.5% PT; 9.5% TC), government agencies or constituents (5.5% PT; 8.1% TC), or recreation organizations (5.5% PT; 5.4% TC).

## C.3 Residence/Work base (RWB)

Many speakers at both hearings resided or worked in or near the BRWRA, or within areas south of I-40 that supported good wolf habitat (i.e. habitat wolves would likely inhabit in the future). However, a significant number of speakers came from areas not currently impacted or anticipated to be impacted by the presence of wolves, including outside the state, reflecting a notable interest in the issue by stakeholders invested in public land and national or state resource issues.<sup>247</sup>

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<sup>247</sup> While the proposed recovery area includes all of Arizona and New Mexico south of I-40, wolves will likely inhabit more isolated areas within these boundaries that contain suitable wolf habitat and prey.

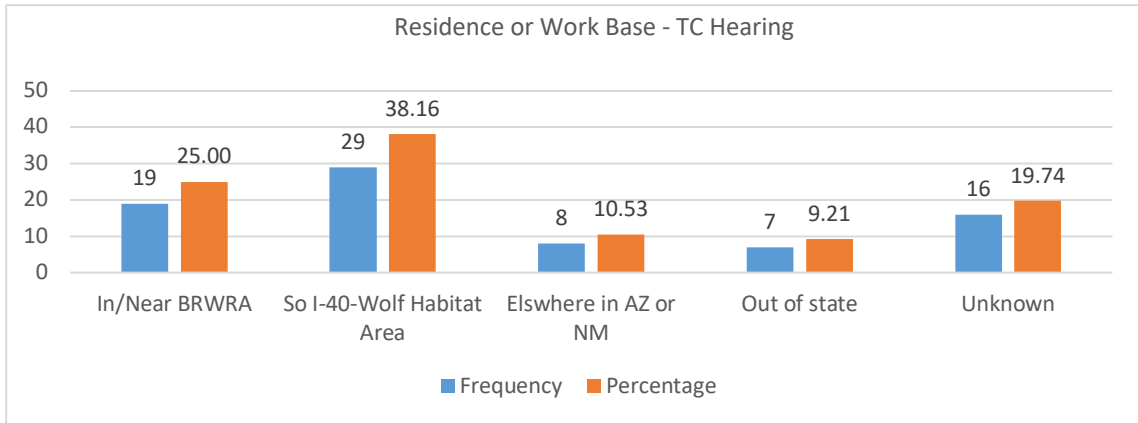
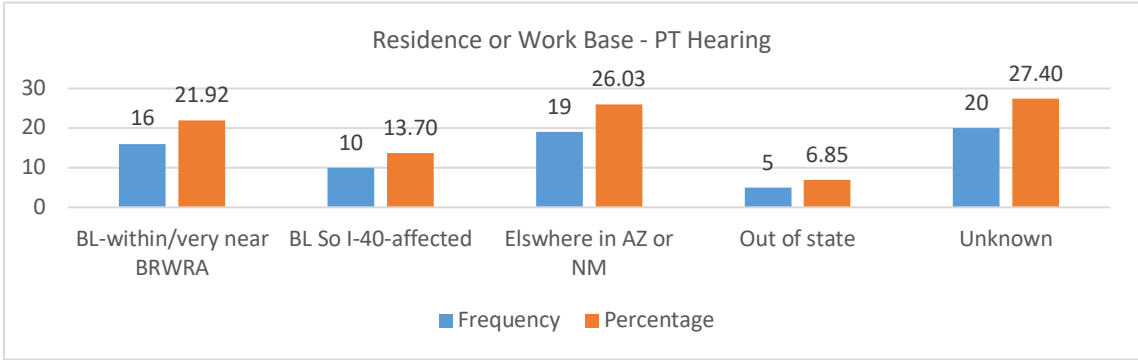


Figure C.2 Distribution of speakers according to RWB. “In or near the BRWRA” includes speakers who have potentially been directly impacted by wolf presence since the reintroduction effort began. Speakers “So. of I-40 Wolf Habitat Area” includes speakers with potential to be impacted by wolf presence when the recovery area is expanded. No assumptions were made on RWB not explicitly stated. Many speakers did not disclose this and were categorized as “Unknown”.

#### C.4 Issue Position

Positionally, there was strong overall support for Mexican wolf reintroduction amongst speakers in both PT and TC hearings. While opposition was not as strong, it was significant (Figure C.3).

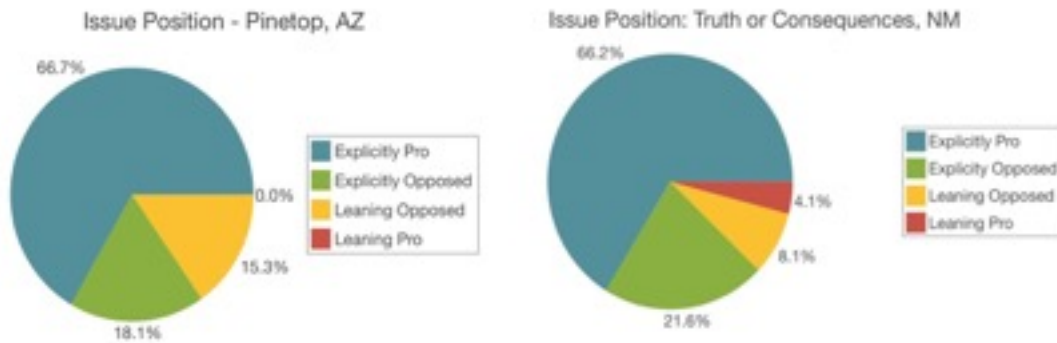
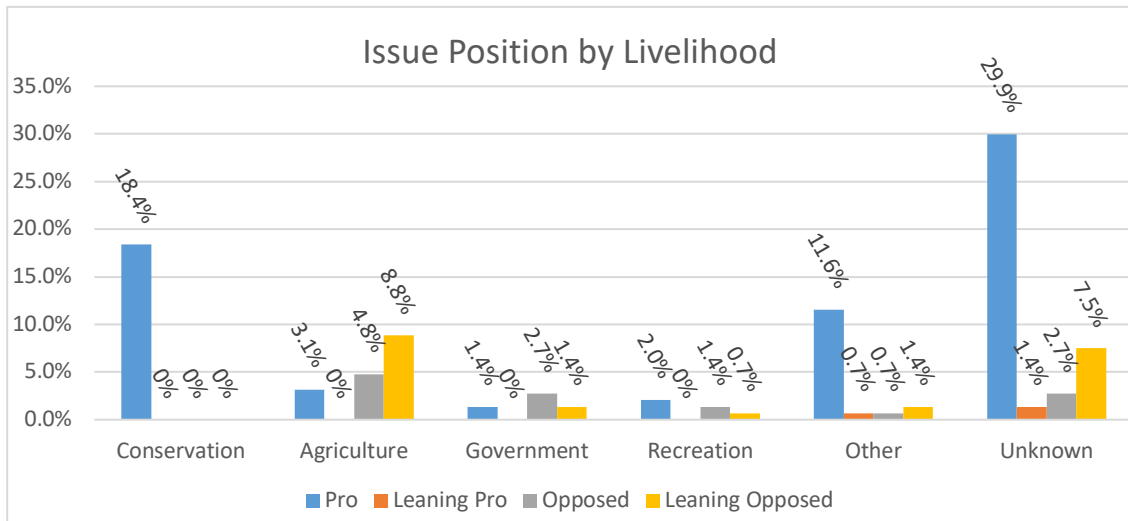


Figure C.3 Distribution of issue position by hearing location. Speakers were coded according to their support or opposition for Mexican wolf recovery in general, rather than their respective positions on specific aspects of the proposed plan. Most speakers at both hearings supported Mexican wolf recovery. Pro-recovery speakers in AZ were explicitly so, while some in NM were less explicitly supportive. Three speakers did not indicate a position and are not represented in the pie charts.

Based on consistency of issue position distribution and relatively consistent distribution of other demographics between hearings, subsequent analyses were conducted at the project level (i.e. the two hearings collectively) to determine the distribution of issue position against LG (Figure C.5) and distribution of issue position against RWB (Figure C.6).

Regardless of speaker LG, most speakers in each RWB were explicitly pro-recovery. This was an overwhelming majority in all RWBs except in or near the BRWRA. For the RWB living or working in or near the BRWRA there was a relative balance between pro and opposed speakers, with 11% pro or leaning pro and 13.7% opposed or leaning opposed, Pro positions were more explicitly stated than opposed positions. All out-of-state speakers were explicitly pro-recovery.



*Figure C.4 Issue Position by Livelihood.*

All speakers working in the conservation field were solidly pro-recovery, and across all groups most pro-recovery speakers were explicitly so. Most speakers working in agriculture were opposed or leaning opposed to recovery efforts, but 3.1% of speakers (18.56% of agricultural group) were explicitly pro-recovery. Those in government positions were mostly opposed to recovery, while positions were relatively evenly disbursed amongst those in the recreation group. Of the significant number of speakers for whom livelihood was other or unknown, most were pro-recovery, but a

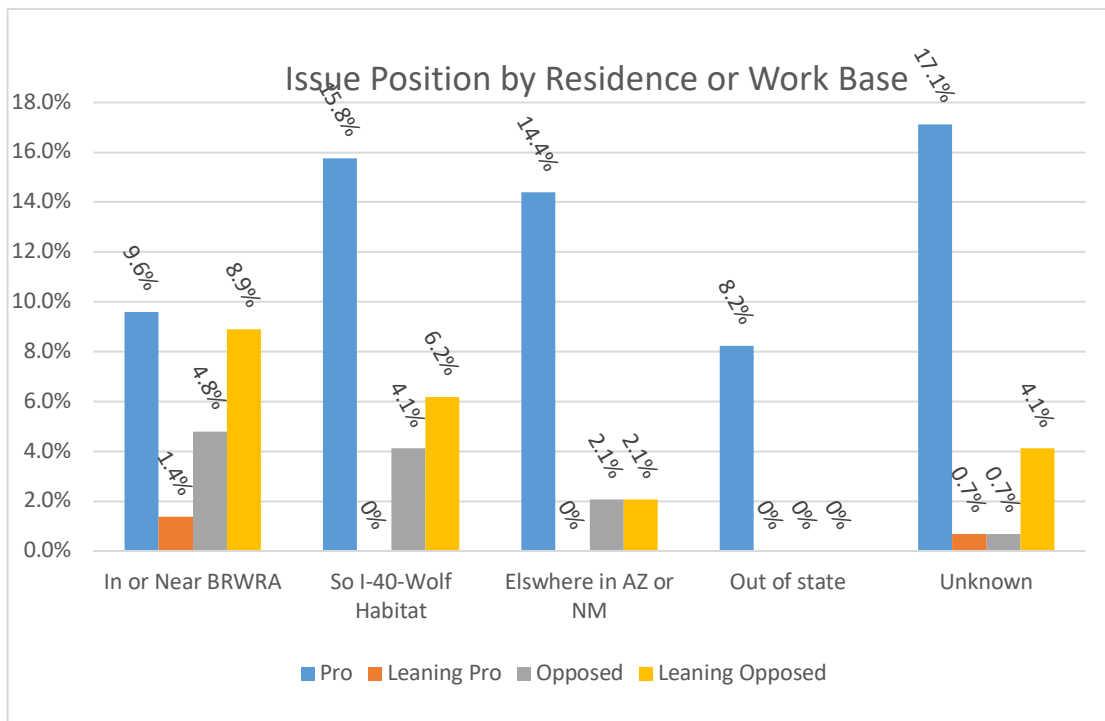


Figure C.5 Issue Position by Location.

With exception to those living in or near the BRWRA, speakers in each group were overwhelmingly, explicitly pro-recovery. While slightly more speakers living in the BRWRA group



APPENDIX D  
MEXICAN WOLF DEPREDATION STATISTICS

Table D.1 2015 U.S Cattle Inventory Unwanted Losses by Cause and State: AZ-NM

State	Inventory	Total losses (by any means)	Inventory lost to all predators	Inventory lost to Mexican wolves	% of inventory lost to all predators	% of inventory lost to Mexican wolves	% of total loss to all predators	% of total loss to Mexican wolves
Arizona	1,095,000	41,980	4122	157	0.38%	0.01%	9.82%	0.38%
New Mexico	1,755,000	70,031	9508	601	0.54%	0.03%	13.58%	0.86%
<b>Totals</b>	<b>2,850,000</b>	<b>112,011</b>	<b>13630</b>	<b>758</b>	<b>0.48%</b>	<b>0.02%</b>	<b>12.17%</b>	<b>0.68%</b>

In 2015, Mexican wolf depredation accounted for less than one percent (0.68%) of combined Arizona and New Mexico total cattle losses, representing 0.02% of total combined cattle inventory. Cattle loss to all predators was low at 12.17% of total losses. This report shows significantly more cattle depredation by wolves in New Mexico, but this is co-related to significantly higher cattle inventory in New Mexico. Data source (USDA APHIS 2017).

Table D.2 2015 U.S Sheep Inventory Unwanted Losses by Cause and State: AZ-NM

State	Inventory	Total losses (by any means)	Inventory lost to all predators	Inventory lost to Mexican wolves	% of inventory lost to all predators	% of inventory lost to Mexican wolves	% of total loss to all predators	% of total loss to Mexican wolves
Arizona	136,000	11,963	5,611	374	4.13%	0.28%	46.9%	3.13%
New Mexico	109,000	12,891	4,644	0	4.27%	0.00%	36.03%	0%
<b>Totals</b>	<b>245,000</b>	<b>24,854</b>	<b>11,013</b>	<b>374</b>	<b>4.50%</b>	<b>0.28%</b>	<b>44.31%</b>	<b>1.57%</b>

In 2015, depredations by any predator were proportionally higher on sheep than on cattle, representing 4.50% of total cattle inventory, and 44.31% of total total cattle losses. Mexican wolf depredations on sheep are lower in number, but higher in percentage when compared to cattle. Statistics are still very low, with 1.57% of total sheep losses attributed to Mexican wolf depredation, representing 0.28% of total combined Arizona and New Mexico sheep inventory. Zero depredation of sheep by Mexican wolves was reported in New Mexico, and while there are approximately 20% more sheep in Arizona, the absence of sheep depredation in New Mexico is noteworthy. Data source (USDA APHIS 2017).

APHIS utilized unverified data for this reporting, based on rancher self-reporting rather than APHIS-confirmed deaths (USDA APHIS 20176). When compared to data from other governmental agencies, the APHIS data is exaggerated. However, even these potentially exaggerated USDA statistics indicate low predator impact on livestock, and extremely low Mexican wolf impact.

APPENDIX E  
CASE STUDY EXEMPLARY STATEMENTS

Statements in this table are from public records transcripts and are presented verbatim in whole or in part. Ellipses are indicative of text removed by the Author. Typos, spelling errors and other errors made by the stenographer (i.e. "cowtowing") and errors in speech or reference made by speakers (i.e. "Mexico wolf") have been left intact in the interest of preserving the integrity of the transcript. The speaker ID on the table is assigned by the Author and is not a public records identifier. While these quotes come from public documents, personal identifiers have been removed by the Author.

Exemplary Statements	
Speaker ID	Comment
PT013	<i>"... Putting limits and boundaries on where a wild animal can go is ludicrous. Native wildlife should be limited to areas that Mother Nature allocates, not politics. Their status needs to be changed to essential. There is now overwhelming proof that wolves help the ecosystem. That proof is Yellowstone. ... These animals come from seven individuals. Every one you kill takes away a genetic diversity that is crucial for their survival, or is that the plan? This is an animal God created to live and kill a specific way for its food, and that's exactly what it does. Each and every animal on this planet has as much right to be here as you and I. We are supposedly the highly intelligent ones. Why can't we use the tools we have to coexist? This fight is not just about wolves. The real plan is to gut the ESA, and you can follow the money trail to the Koch brothers and the politicians they have fought off with their millions. USDA Wildlife Services should be disbanded and take the budget they use to kill native wildlife, \$2 million in 2013, and give it to ranchers and others for use on nonlethal methods of coexisting with predators. This animal is just trying to survive and feed its family like you and me."</i>
PT014	<i>"I'm the daughter of a Spanish rancher who was on Spanish land established in the state of New Mexico in the 1500s. Some of the -- one of the earlier commenters said something about the wolves were here long before we were. Well, that's true, but a lot of the things we have established here are good and beneficial to everyone in society, and we hate to see it disappear just as much as some of you would hate to see the wolves disappear. I'm married to a rancher whose parents established their ranch in 1904 and have struggled hard in that over-hundred-year span to be good stewards of the land. ... Right now, America is still one of the strongest nations on earth with the safest, most affordable and readily available food supply. Some of you may be able to shop at Whole Foods for your organic, unicorn safe, pixie-dust sprinkled vegan groceries, but most of us just eat meat, eggs, dairy products, and veggies that we either raised ourselves or went and bought at our local grocery stores, because that's what we can afford. With every regulation or restriction that is imposed on agricultural industries, the cost of production increases, and with every supposed endangered/protected/essential species introduced, more small producers are made to --"</i>

Exemplary Statements	
Speaker ID	Comment
PT025	<p><i>"... I'm a long-time resident of Arizona, and I hike and camp in the Southwest public lands, including those in the Blue Range Wolf Recovery Area. I'm strongly supportive of increasing the area where wolves can be released. This change is long overdue, and I urge the Service to follow through by expediting the release of many more wolves from the captive population. ... I am appalled that the expansion of the 10(j) area is proposed rather than removal of politically-based boundaries and designation of these native wolves as essential. The Service's claim that should the expanded allowances for killing and removing these critically endangered wolves who have up to five generations of experience in the wild actually wipeout this population and you can simply start over from the captive population is appallingly cavalier and ignores both science and common sense. The wild population of wolves is essential ecologically, economically, and in every legal sense of the word. The Service has acknowledged the proposed changes to the rule will not achieve recovery of the Mexican gray wolf, and you are well aware that you have included provisions which directly contradict the recommendations of the scientists on the Recovery Planning Team and the best available science on what is necessary for recovery. It's time that you demonstrate real leadership for the recovery of the Mexican gray wolves instead of playing politics with these important animals' future."</i></p>
PT026	<p><i>"Wolves, like other predators, are vital to the ecosystem...The proposed rule changed to allow them to move south all the way to the Mexican border and north to I-40 is a wonderful first step, but they will also need room to roam north to Utah and Colorado. Wolves don't understand boundaries and they can't behave naturally if they are subjected to such unjust penalties as being captured when they roam beyond the boundaries or even killed if they are suspected of killing livestock. Wolves are so afraid of being seen by humans that sightings are very rare. Therefore, if a rancher is concerned about his or her livestock, a simple solution would be to make their presence known on a regular basis when riding fences, tending, or feeding. Also, the Fish and Wildlife Service should require ranchers to remove carcasses that die of non-wolf causes so that wolves are not drawn to live cattle. ... Wolf recovery and the restoration of natural balance require that we have populations of wolves in suitable areas that connect throughout the southwest. When that happens, elk and deer herds will be healthier leading to healthier growth of grasses and trees, which provide habitat for small animals. Every part of the ecosystem matters to the health of our planet."</i></p>
PT034	<p><i>"I'm here to talk about political decisions and science. You know the science. You have gotten the science over and over and over again, and then special interest groups get really loud, and you make political decisions. You know that wolves don't know political boundaries. They don't know that US-40 is the top end of their limits. You know that if you put a gun in the hand of a rancher who has had problems with wolves, he is not going to check the genetics on that animal. Now, I'm a grandmother, too, and I want to know, do I have to tell my children and my grandchildren that the wolves were lost, because of political decisions? I hope not. Please reconsider this insane thing ..."</i></p>

Exemplary Statements	
Speaker ID	Comment
PT038	<i>"I'm a retired army colonel with 32 years of service. My last assignment was in Afghanistan. I make this statement only because the perception out there is that people who speak out for protection of our wildlife environment are liberal, draft-dodging, environmental terrorist hippies or something to that effect. ... Unbridled destruction and extermination of the Earth and its inhabitants is not healthy growth any more than a malignant tumor. What makes this country great is its diversity in all forms. We need to make a policy that is beneficial to all, not just the few with the loudest voices and largest wallets. Some do not have voices, such as animals, and other groups of people. Therefore, we have a moral obligation to protect and defend the ... I understand fear. Believe me. I have been afraid many times in my life, but we can't just try to wipe out a species. Extinct means extinct. It means we will never get it back -- just out of fear."</i>
PT046	<i>"I moved with my daughter into wolf country, and I was not afraid. I'm more afraid of raising her in a world without wolves and with an unhealthy ecosystem. ... I think you need to consider full recovery and allow wolves to go to suitable habitats including the areas north of I-40. I support the primacy of native species on our public lands, and I believe that the human extractive industries that use public lands should be secondary to the needs of native wildlife and healthy functioning ecosystems. And, as such, the Fish and Wildlife Service needs to stop cowering to the cowboys. The proposed rules and provisions of take are far too deferential to the people who are already degrading our public trust ecosystems with their cows and sheep and profiting at our expense. Any management of wolves should require full compliance with animal operating instructions, deterrents, and carcass treatment. Why would you reward bad livestock management with wolf removal? Exempting Wildlife Services for take provisions preemptively is offensive. ... Wildlife Services does not have a mandate to conserve native predators and essentially with your proposed rule, you have written these hired killers for the livestock industry a blank check. ..."</i>
PT052	<i>"... Wolves belong. They deserve room to roam, and the boundaries for the Mexican wolf EPA should be based on science not politics. The extractive industries, including ranching, should be secondary to the science-based recovery plan and decisions for this species. Management of the Mexican gray wolves should require grazing permits to fully comply with their terms and removal of cow carcasses. The wolves have no choice about where they go. The people have choices ... When my son and I camped in the Blue Range, we were there because of the possibility of seeing or hearing wolves. I ask the Fish and Wildlife Service to please fully consider the economic impact of tourist dollars generated by wolf populations that are in the wild. I also ask the Fish and Wildlife Service to fully consider the impacts of the militarized border zone and how that will affect border migration on wolves from both directions."</i>
PT053	<i>"... The territory needs to be expanded and the gene pool needs to be expanded. As a keystone species, they do extend biodiversity. We've seen that in Yellowstone, the northern Rockies. The hunting is better, the elk herds are better. Also, remove the nonessential experimental population classification. And I do not think that they should expand the takes and kills. It's like bringing back standard operating procedure 13, which allows more removals."</i>

## Exemplary Statements

Speaker ID	Comment
PT123	<p><i>"I'm a fifth native to Arizona, Yavapai County. You know, I'm opposed to this. I've lived my life with the cows. I've done it my whole life, and you guys are throwing stuff down our throat that we -- you know, that we don't like, and it's a wrong thing to do. You guys are lying to us. You guys are dumb talking on everything, and that's a wrong thing to do. Another thing is I wouldn't have found this out, this meeting out, if didn't go to Payson last week and got a newspaper. You guys don't put this stuff out there so the whole public can see. You guys just hide stuff. And then, you know, you people talk about wanting to save these damned wolves. Well, have you guys ever been down there in Apache Creek and that and reserve and seen the little old cages that the kids got to sit in, because the wolves are out there -- waiting for a bus. The bus driver has got to honk for the parents to come. You are scaring the shit out of these kids. It's bologna. I'm opposed to this damned thing."</i></p>
PT125	<p><i>"... The wolves, people say, you know, they kill the sick and the weak. Well, you know what? I have a problem with that. On December 2, 2013, they came down and ran a good horse, one of my best horses, through a gate not 100 feet from my house, broke a leg off him. I had to shoot that horse. Then there was a three-day period before anybody got back to me on the phone to see what had happened. Well, they said, 'It's kind of late to come and check things.' I said, 'Yeah, it is, because I done buried the horse, and you wouldn't have been able to find the track anyway, because the ground is frozen.' ... Then EIS is talking about expanding the wolf territory. There has been plenty. You know what? We have got enough wolves, and we need to do something about the problems that we do have, not create any more. We have got cages, as was addressed earlier, that our kids have to sit in waiting for the school bus to keep from getting ate by wolves. If you got to worry about your kids getting eaten by something, that's something you don't need to have around ..."</i></p>
PT127	<p><i>"Now, your proposed rule does help the hard-working IFT, and it provides relief to the people closest to the current release and disbursal areas by providing more room and other opportunities, but otherwise, it's a slap in the face to two groups. First are those livestock owners who are honest, law abiding, may or may not think reintroducing wolves is a good thing, but are concerned about competition and their bottom line. When I was privileged to command five different artillery units in Vietnam and the cold war, I tried to make rules that rewarded people for doing the right thing. Allowing anyone to kill a wolf going after a staked-out pound puppy only serves to tempt the honest majority and rewards the worst in human behavior. Secondly, you are insulting 52 captive breeding facilities operating with little or no federal money whose hundreds of dedicated workers and thousands of volunteers work all hours rearing genetically valuable wolves, developing techniques like cross-fostering. These people have been at it since before the current pathetic recovery plan was written on a typewriter in 1982. They deserve better than to pull pups from their mothers to give them a chance in the wild only to see them used for target practice by an agent supposedly shooting coyotes."</i></p>

Exemplary Statements	
Speaker ID	Comment
PT137	<i>"... have lived in Arizona forever. I have grandchildren and two daughters and a stepdaughter, and I taught for 27 years in public schools. I got to tell you, it's parents that put devils inside kids' heads. We need to be very careful what we say to our children. Our forefathers had the vision to set aside public lands for the enjoyment of all. ...Across the nation, hunting and angling is declining. Society is changing. There are fewer young people who want to pick up a gun or a bow or a fishing rod and engage in consuming wildlife. An ever-increasing number of people are recreating by hiking, traveling, mountain biking, skiing, wildlife, back packing, camping, bird watching, bouldering, camping, kayaking, rafting, and climbing, real money for the State of Arizona. When our agency is entrusted with the care of our native animals and broaden their view to engage, really engage, the majority, the nonconsumptive public, there are many of us here who are waiting to assist with our support and money. We are waiting for politics to get out of the decision-making process. We are waiting for science-based decisions that favor ecological health over economic health of special notice groups. Ecological health includes hunting, angling, ranching. I'm so sick of this us and them."</i>
PT142	<i>"... we went to a bunch of meetings a lot like this one. I went to one in Reserve, and there were a lot of people there telling us that the impact on the ranching industry was going to be minimal. There wasn't any threat to anybody, all this kind of stuff. And there were a lot of people who were standing up with concerns. Those people were all basically told that they were inbred rednecks, and they didn't know what they were talking about. And here we are all these years later finding out that everything that we were worried about came to pass, and it's all true. Now, there are a lot of you folks who might have some property between here and I-40. There is a lot of subdivided land out there. You are going to find out what we found out. Your dogs are going to die. Your livestock is going to die. Your kids are going to be threatened, and this is going to be a great big old mess. ..."</i>
PT145	<i>"... This whole wolf program, as far as I'm concerned, is just a racquet. Nothing more than that. It's an environmental romantic idea to listen to a wolf. See, this is the unique thing about you guys. You are willing to wipe out about three or four different species of animals to save one that is basically worthless. We have no shortage of wolves, and you all know it. We have more than enough predators right now for the game we have. We can't stand any more. So, basically, what it comes down to -- is we had a range war in this country in 1882 that lasted 10 years over something far less and that was just sheep. Now all these years later they are trying to pour wolves, the worst predator on earth, on these people's doorsteps. It ruins the economies. It ruins rural living, and I think that's exactly what it's about -- rural living."</i>
PT151	<i>"... Apex predators lead to a healthy ecosystem. They create what is called a trophic cascade. Apex predators, such as wolves, would lead to a decreased loaded-up population which would then prevent overgrazing on native grasses on willows and aspens across Arizona. ... I-40 is a political boundary, not a natural obstacle. Wolves can't read maps, and furthermore, there is no science to support this being a useful boundary. ... I would like to say that State and federal agencies are stewards of the land, and they cannot pick and choose which processes to protect and which to ignore in the natural processes of Arizona. And, as individuals, as patriots who love our home, we need to respect all the natural processes in these lands. Wolf recovery and economic well-being are not mutually exclusive ..."</i>



Exemplary Statements	
Speaker ID	Comment
PT163	<i>"I'm strongly against the wolf of any kind that is going on. Between Arizona and New Mexico, we only -- there has been a study that came out, an analysis, more or less, that we supply two and a half percent of the nations' feed supply. And that's not including what we could get at full capacity, because of other environmental issues we have to deal with on a daily basis ... if you put into our area a high -- just like a high-kill predator like a wolf does, they don't just kill for meat. Regardless of what your studies say or what you do, there have been countless documentations that they just kill just to kill, just to do it, because that's what they enjoy. They are good at it. They are designed to do that. That's their design in nature. Once humans hit this earth and start changing landscape, you can't go back to nature like it was ... you can't tell somebody that this is a right they have had so many years, and you say, 'Oh, no more. You can't do that. There is a wolf out there, and that's what they need to live on.' That's not right when you are putting an animal over people. That's just backwards and wrong. If we weren't supposed to be in charge, we wouldn't have opposable thumbs and a free-thinking mind. It just wouldn't work that way."</i>
PT170	<i>"So it appears these days that our rights are under attack an awful lot -- our right to privacy, our right to bear arms. Free speech is also in danger. So now we are considering even more laws, more regulations that are going to tell us what we can do on our own land or the land we lease, so why should we entertain this or entertain any further expansions. Well, the sad truth is that unless we show some moderation and restraint, at the rate we are going, it will continue to take over our lands and continue to drive the species out of existence. So that having being said, if some of the testimonies here tonight from the ranchers and from the County and from the State are to be believed, and I do believe them, it would appear that the Fish and Wildlife is not listening to the State, and no one is listening to the County, and no one is listening to the ranchers. They have already told you the response to predation has been miserable, and they have no choice, but to work with this. It's a law. So we have a choice. The law is on our side. I say 'we.' I'm a conservationist, but I also respect the rights of people whose animals have been killed. With all due respect, conservation groups, who I'm very supportive of, it seems you are not listening to the ranchers, either. So I would say that until we have proper cooperation from Fish and Wildlife through the local level, because it is on the individuals who are going to have to sign this in the end, the person who is going to pull the trigger on the wolf is going to be someone locally, so until we get a trust relationship developed with the Fish and Wildlife through the local and state levels to the ranchers, I don't see that we should be making any changes to the current situation ..."</i>
TC004	<i>"We are a noncreedal church, but we covenant to promote and defend the inherent worth and dignity of all people, and also to support the interdependent web of all existence of which we are a part. The reintroduction of the wolves to the land that was theirs is recognizing that interdependent web. We rely on each other, and that includes our animal friends, our animal relatives. We need one another. We need it to be in balance. The wolf will bring back that balance. Wolves don't carry passports. They can't -- they don't recognize I-40, and I think the expansion is certainly a good idea, but the expansion needs to be even broader than it is. And to traumatize these wolves through the capture and return to specific areas is unnecessary, in my opinion, and I think scientists would also agree that that is traumatizing and unnecessary."</i>
TC010	<i>"... I spent my 375th night since 1998 camping in a tent in Mexican wolf home ranges."</i>

Exemplary Statements	
Speaker ID	Comment
TC017	<i>"... Fish and Wildlife Service regional director ... denied conservation districts the opportunity to participate as cooperating agencies. Federal law mandates that Fish and Wildlife Service to include local government participation. Not doing so was a clear violation of NEPA, yet the Fish and Wildlife Service unlawfully proceeded in drafting and issuing this draft EIS. Our county manager provided your agency with the detailed economic impacts this program and boundary expansion is having on Sierra County, the poorest county in one of the poorest states in our nation. Our primary income is derived from farming and ranching and the hunting industry, all of which have suffered dramatically as a result of the Mexico wolf. This data has been completely disregarded. You have ignored the pleas of our people, you have disregarded the law, and this seems to be common practice within our federal government and specifically this agency. I ask your agency to reconsider the proposed boundary expansion of this nonessential wolf and a program that is clearly a failure on all aspects."</i>
TC021	<i>"I just wanted to highlight the facts that planning needs to define a number of wolves to allow the public to understand clearly what the intentions are. Knowledge is power, and by delaying these decisions, you take the power away from the people to make decisions responsibly, and that is isn't right no matter what side of the fence you sit on. It suggests deception, and it suggests a lack of integrity. And those are two things that the U.S. Fish and Wildlife Service does not want to suggest to the American public ...This expansion will be a devastating blow to ranchers and individual ranch families, especially if you're only that 1 percent or 10 percent ... I'd like to see sound science that represents a substantial impact that our ranching and our agriculturing industries have on our economy and how the wolf will detrimentally impact that in the heartbeat of American society, agriculture."</i>
TC022	<i>"... We saw that with the proper implementation of a recovery and reintroduction of the wolves in that area, the Yellowstone National Park has become the keystone of America and represents what American wilderness should look like ... So in that regard, I would like to point out that wolves are an essential species. Instead of limiting, we should have no boundaries, or very wide boundaries for the Mexican gray wolf. And as far as integrity, I would like to point out that there has not been one testifiable account of wolves stalking children or attacking a human being, and that I find that the violent imagery of that is an affront to the public integrity and also your integrity as commissioners ..."</i>

Exemplary Statements	
Speaker ID	Comment
TC025	<i>"I live in Arizona. I lived there most of my life. Mexican gray wolves are intelligent beautiful animals who are essential to restoring balance and healthy function to our southwest wild lands... The expanded provisions and allowances for killing, trapping and removing these important animals from the wild is unacceptable, especially when you are well aware that scientists from the recovery planning team have said a reduction in human caused mortality must occur for the lobos to achieve recovery. Likewise, the scientists have published peer review articles that state we must have at least two more populations north of I-40 with movement between the three for recovery to occur. Yet, your proposal makes this impossible. It makes it impossible for Mexican wolves to occupy or move in and out of the best remaining suitable habitat north of I-40. The expanded area for releases is the only completely good thing in your proposal for the wolves and it is long overdue. Otherwise, many of the proposed changes contradict the best available science on lobo recovery and demonstrate an appalling weakness in the U.S. Fish and Wildlife Services leadership, whose job it is to recover endangered species instead of political kowtowing to special interests."</i>
TC028	<i>"... Our customary and established uses of our lands is ignored. Known facts are distorted. Proponents of all these new mandates, in almost all scenarios, never see out of the offices they're typing the regs in. Saving our public domain just for the sake of preservation just cannot and does not outweigh creating wealth and economic growth while maintaining the resources. The use of biodiversity and conservation biology and today's policy formulation is based more on a well-funded political agenda than on true science. Most of this is based on myth. So no one argues the need to protect biodiversity. The question is, how much and at what human cost? ..."</i>
TC030	<i>"... I'm just adamant about the fact we're changing the rules, again allowing for more destruction of this very threatened species that should definitely be essential. There is no way that you can replace four or five generations of wild animals that have been born in the wild from any captive breeding facility. ... I am also adamantly opposed to any kind of turning over to either state Game and Fish Commissions who expressly have already decided that they're going to get rid of them and they'll never survive ... Issue a mandate to recover and conserve these species, not hyper-manage them. That's why we don't have as many as we should have right now. They've been killed, they've been removed by you, they've been killed by wildlife services mistaking them for coyotes, they've been killed with collars destroyed and smashed and disappeared. That has to stop. We have got to stop killing them."</i>
TC032	<i>"... Predators are necessary in a natural system to ensure the balance between all elements. Without this link in a chain, the balance is easily disrupted."</i>
TC037	<i>"If you actually cared about the wolves, you would make wolves essential and not allow them to be unethically taken. Let's not pretty up the word 'take'. What you mean is that more people can kill, or easily kill, the animals you supposedly protect. Keep your integrity and do the job you're funded for."</i>

Exemplary Statements	
Speaker ID	Comment
TC039	<i>"My family lives in the outback of Socorro County and what I hope becomes part of the zone one of the Mexico wolf experimental population area. I hike frequently, and one of my favorite places is a cottonwood park on national forest land. The cottonwoods are all old, and every year a few more die. There are no cottonwood seedlings to replace them. Within a couple of decades, at most, these trees will all be dead. I like cottonwoods because they harbor so many different kinds of birds. There is new document research that indicates the presence of wolves in ecologically effective numbers can give trees like cottonwoods a reprieve from herbivores so the seedlings can grow. Restore the wolves and you can save the trees; save the trees and you save the birds. ... Write a new recovery plan that reflects the best available science, not what was available 30 years ago. Declare this lobo population in the wild to be essential."</i>
TC041	<i>"... I would like to speak for myself as a human being in a world that is, as we all know, falling apart."</i>
TC045	<i>"... some of the things that appear promising, like recovery removal when wolves are transgressing outside their areas, we've been told that before. It hasn't happened... The utter disdain that we feel is the document and the stuff that was shown up on the screen, that losses are insignificant, our livestock losses are insignificant. If somebody's taken \$1,200 to \$3,000 out of your bank account 20 or 30 times a year, tell me that's insignificant. And terming the population -- saying that the populations of concerns aren't being harmed by this? Do you have any idea how insulting that is to the people sitting in this room? You've got to figure out a way to work with us in a believable manner if anything is going to go forward positively."</i>
TC055	<i>"Please eliminate the arbitrary lines on the map and allow these highly endangered animals to roam north and into the greater Grand Canyon area and beyond ... Despite the best available science, the Service continues to provide boundaries that restrain the wolves and keep them from moving northward and now east into parts of Texas. That is unacceptable and scientifically indefensible. ... The wolves should be treated as the endangered animals they are and have the full protections of the Endangered Species Act. XXX has advocated for that from the beginning of this effort, and it becomes clearer each year that it is the right thing to do morally, scientifically, and legally ... Perhaps the most disturbing about the Service proposal are the expanded provisions for killing, trapping, and removing Mexican wolves. How can you justify that? How does this in any way further the recovery of these endangered animals? The Service itself has acknowledged that killing and permanent removal of wolves for so-called conflicts will not contribute to their recovery. You know it's wrong."</i>
TC059	<i>"... The Mexican wolf has the right to their native land."</i>
TC103	<i>"... We need to open our eyes and our hearts to eliminate the boundaries of the wolves' movements. These lands belong to all of us ... Let's make the right choices to see a beautiful future. Let's welcome home the most endangered land mammal in North America, and not mistake."</i>

Exemplary Statements	
Speaker ID	Comment
TC114	<i>"... We believe that this is a population of large mammals that has been stressed and demonized and overall made pariahs and had a difficult road throughout their entire existence, since the latter half of the 20th century."</i>
TC116	<i>"When will the number of wolves be adequate to achieve your goals for the reintroduction? That has not been clearly defined, and the New Mexico ranchers need to know when enough is enough. When will the depredation stop? Ranchers have tried many methods to keep wolves from killing their livestock, but the devastation continues. It's an all-out assault on these ranchings families. Many are already at the brink of going out of business. This new proposal is sure to push many more off their land. When will the fear stop? These families live in daily fear of losing the family dog, their favorite horse, or worse, a child. When a mom finds a wolf in the backyard stalking an Australian shepherd, it's easy to imagine the toddler on the swing set is next. Ranchers in the original Blue Range Wolf Recovery Area were told the boundaries defined in the original plan would be permanent. Now we're told there needs to be more expansion, more wolves. When will the expansion end? What are the ranchers, outfitters and tourism service providers such as restaurant and gas station owners supposed to do after the wolves have taken away their livelihoods? How will we recover those jobs, rebuild the economic engine? Again I ask, when is enough enough?"</i>
TC118	<i>"... We are tired of the Fish and Wildlife Service trying to get the radical agendas through. We are tired of you picking whatever is the best available science."</i>
TC120	<i>"... It is an important thing for our ecosystem and we should greatly consider broadening our horizon toward the fact that they were there first. You may forget about that concept because we have a road and our giant buildings, but the birth was here and they were here first. We took over. We are the invaders."</i>
TC126	<i>"So we are to understand that it is okay and an acceptable price to pay that people are be maimed, mauled and killed as a result of your efforts and our government turning wolves loose on us? You hide behind the use of wildlife for what would otherwise be felonies. Last year in Minnesota, a 16 year old was attacked by a wolf, biting him in the head and in the back. Wolves killed two people in Alaska and Canada last year. You won't see any difference. It is comparable to behavior of feral dogs ... Mix wolves with it, how will it turn out? Wolves were never endangered here, they just didn't live here anymore. The behavior and end result of the attacks isn't different whether it's a dog or a wolf that did the biting and chewing. Wolves are nonessential. We got by without them for at least the last 70-plus years. It's questionable how many of these wolves are part dog. Early on, a black Lab bred with wolves. How many dogs and wolf combinations are out there now, and what is to stop them from more? This is arid country, not a great source for food like some of the far northern parts. It's only a matter of time before people, someone's child, are killed by wolves. Why should we put up with it not being safe anymore to camp, enjoy our public lands without the threat of being attacked by wolves?... Our grandfathers eradicated the wolf because they didn't mix with people, same as grizzlies. We eradicated polio and smallpox –"</i>

Exemplary Statements	
Speaker ID	Comment
TC135	<i>"What I hear is a lot of these people don't live with it. We live in the middle of it; we deal with it daily. We have people in Catron County, the kids are living in cages to catch the school bus to get off of it. Are you all aware of that? Your great little endangered wolf that you want? It's ridiculous. The economical impact that it's going to have on our wildlife and our livestock. You guys act like there's deer everywhere. There are coyotes and lions will eat it up. They're gone. You know it's our job is to protect our natural resources and management. This is a perfect example of a government overreach. The Endangered Species Act? Look at our courts. They have a national -- every year, you watch the news, you've got more and more forests burning, record forests burns. You know why? Because of the spotted owl. You take the wildlife out, and your cows out of it, you take the logging out of it, and we allow this wolf, devastation. What it does, is not that we don't like the wolf. It's nature. It kills for fun. It can go and kill 200 sheep and not eat any of them. It's not that we don't like the wolf. We don't like its nature. That's why the government eradicated them the first time."</i>
TC143	<i>"... Back then, I also advocated at public meetings with Fish and Wildlife Service to work with the ranchers and to address their concerns. But I've been disappointed that the politics of an anti-wildlife minority has trumped science as the recovery program progressed."</i>
TC146	<i>"I moved here from Oklahoma to Arizona to be closer to the wolves and to roam free with them. I believe my spiritual connection, my passion for wolves, is so very strong that I went to such lengths as to change my last name to "Wolf." ... From reported cases of wolf attacks, I do believe it is not substantial and sufficient to have documented wolf attacks on livestock deaths and attacks on humans, yet they get an unjust bad rep for the majority of such claims that holds them accountable when there are more reported cases of deaths from lack of food source, such as overgrazing, living conditions, and diseases. I'd rather die on a cause than live on feed."</i>
TC147	<i>"... you talked about unacceptable impacts for an ungulate herds and the possibility of killing the wolves for that purposes. Why not let carnivores and prey find their own balance? Wolves and other -- wolves and ungulates lived together for millennia in balance. They can do it again. Just let them find their balance. We don't need to kill wolves."</i>

Exemplary Statements	
Speaker ID	Comment
TC149	<i>"I'd also like to point out that I am a fifth-generation rancher located in southern New Mexico as well. And tonight I want to speak on behalf of a demonized industry that has been made a social pariah. This industry has been told to produce more product to feed a greater number of a growing population. These people are responsible for feeding the US, while also being good stewards of the lands and the wildlife within them, all the while contending with the ever increasing number of predators, including those present who wish to do away with them. Every one of these stewards would go out of their way to properly care for any animal. These people understand the importance of predacious species and their place. They understand that this experimental nonessential wolf population has its place in the wild. But their place is not amongst species that any and all defensible characteristics have been bred out of. Nor is their place amongst people. These habituated captive raised domesticated canines are a threat to the population. I do not understand how much proof there needs to be for a wolf approaching a child or stalking a family. This is a master predator, you've all admitted that. This master predator being released into a population area, or a highly populated area, doesn't need proof that it will habitually and eventually stalk or go among people ..."</i>
TC150	<i>"... We talked about the genetics. That's your first major issue. Your next one is a small ecosystem. Your third is an ecosystem with people that live in that ecosystem. I'm not against the wolves. I think there's a place for wolves. I think they do belong in Alaska, Canada, where there's no people."</i>
TC152	<i>"Everybody's talking about the ungulate population, and I'd like to see the ungulate population in Luna County. We don't have any. There's no elk, very little deer. What do they eat? ... But we're inviting them to our back door. Are we going to feed them? Fish &amp; Wildlife going to feed them? What are we going to do? So the economic impact, if they do prey on any of the cows, anything that -- any of our wildlife, pets, it's going to cause a huge impact on the population. We only have 25,000 people in our whole county. If they devastate a herd of cattle, how's that going to -- where's the economic impact going to happen all the way throughout Luna County? It's a huge impact on us. We can't afford it. We don't want to have it happen to us. We don't need any more -- we are a poor county and we don't need more devastation."</i>
TC156	<i>"One of the first things I'd like to say, maybe it's not about the wolves, but I just wondered how many of these wolf hunters out here are associated with PETA. Because you know, all them, they oppose every kind of killing there is like horses and dogs and things. One of the last -- I read a documentary about the last wolf that was killed over in eastern New Mexico and this ranch hand went out there and found this big old steer that a wolf had cut the hamstring on. Most people don't know what a hamstring is. It's the bleeders that lead down to the hind leg. Drag around the wolf, kept eating on his back end for days and days. You can see where he just drug him all over the place there. And anyway, anybody that has any heart for anything, a whole lot of suffering goes on in them kind of deals..."</i>

Exemplary Statements	
Speaker ID	Comment
TC164	<p><i>"... First, I'd like to say we are opposed to any expansion and have been opposed to it from the beginning. I think that this is an action that takes no consideration to what the founding fathers had for our country and it runs all over private property rights, our right to the sovereignty of our state, and the county ... They do not take into account the locals and the people -- I mean, predominantly, I guess polling here, Dona Ana County has been pretty well represented. I think it has been a hundred percent overwhelming that they are for wolf reintroduction, but let's all be honest. I don't think the wolves would do very well in Las Cruces, or even in the Organ Mountains. So it falls back into the communities here, and we are not in a place that the wildlife can sustain this. The people that live out there, the people that work out there know. And people say the ranchers will be taking. Most of the time we don't see what's killed. We already deal with losses from bears and lions. And most of those losses go unaccounted for. It's very remote country. The likelihood of you coming across carcasses is almost impossible. So that's just something to placate everybody and say, 'Oh, everybody's going to pay you.' That doesn't happen. That is not reality. And in a country where our vets are dying in the hospitals because we don't have appropriate deals, we have homeless people wandering around, and we're spending money on this kind of thing, we ought to be ashamed of ourselves. Our country, the first 150 years wasn't founded on this. If we were run like the last 20, we would be a Third World country."</i></p>
TC165	<p><i>"... It can work, but it just seems like there's been a lot of half measures taken where you can go here if you're a wolf, but you can't go there if you're a wolf. You can do this to a wolf, but you can't do that to a wolf. So I think that if you want to go forward and save this species from extinction, you need to do something a little bit stronger. Either go forward with this program if you're going to do it ... I'm encouraged by the expansion of the boundaries; however, making it easier to kill wolves and saying you can't go north of I-40 ... Finally, I'm a little frustrated by the attitude toward predators, that it seems that some think there should be no predators. Nature has predators. That's just the way it is. So, are we going to have a nature with predators or some alternative big zoo?"</i></p>
TC168	<p><i>"... An abstinence of a factual or logical foundation for fear does not make the personal impact any less real. Fear is a personal thing. Some people will fear wolves no matter what the facts are. Others will fear wolves no matter what the facts are. But whether this goes true with the facts that people fear sexual predators. Because that's how I feel these wolves are. I had two encounters with wolves with my two little girls and my wife that are documented. You guys know and are fully aware of these encounters. My children fear wolves and they have a reason to fear wolves. The human safety concern should be your number- one consideration when you guys are developing a recovery plan or this draft EIS. And if it's not, you're going to hear from me over and over and over again because we've lived it. On a second note, you guys have a constitution, to uphold the constitution to protect the human safety and well-being of the general American public and that should be your number-one concern."</i></p>



Exemplary Statements	
Speaker ID	Comment
TC171	<p><i>"I attended the session this afternoon, and I want to thank the Service for their slick presentation and their canned responses to our questions. The answers to our posed questions, both pro and con, were short on substance and long on (inaudible). The U.S. Fish and Wildlife Service is just another example of the increasingly lawless federal government acting in spite of the constitution, NEPA, ESA, and all the other acronyms you can think of. The true not so well hidden intent of this introduction expansion of this recovery area is to drive us from the land, destroy us economically, and with total destruction of our private property rights. It's interesting listening to the comments here tonight. The people that are pro, the people that support the expansion of this recovery area, are those people who have the least to risk. Their livelihoods are not at risk and their private property rights are not at risk. In my estimation, there's very few places for the wolf on this earth. Let's say perhaps Alaska, Canada, a zoo or two, Grimm's Fairy Tales, or hanging on the wall."</i></p>

APPENDIX F  
EMOTION FREQUENCIES

LEVEL	SENTIMENT	EMOTION	EMOTION PRESENT	Frequency	Percentage	Percentage (valid)
			EMOTION PRESENT	137	91.95	95.14
Basic	P	Joy		12	8.05	8.33
Basic	P	Trust		7	4.70	4.86
Basic	N	Fear		17	11.41	11.81
Basic	P/N	Surprise		0	0.00	0.00
Basic	N	Sadness		7	4.70	4.86
Basic	N	Disgust		5	3.36	3.47
Basic	N	Anger		2	1.34	1.39
Basic	P	Anticipation		13	8.72	9.03
> Basic	P	Admiration		11	7.38	7.64
< Basic	N	Apprehension		15	10.07	10.42
< Basic	N	Annoyance		2	1.34	1.39
> Basic	P	Vigilance		13	8.72	9.03
Primary Dyad	P	Love		0	0.00	0.00
Primary Dyad	N	Submission		2	1.34	1.39
Primary Dyad	P	Awe		2	1.34	1.39
>Primary Dyad	N	Alarm		9	6.04	6.25
Primary Dyad	N	Disappointment		11	7.38	7.64
Primary Dyad	N	Remorse		14	9.40	9.72
Primary Dyad	N	Contempt		46	30.87	31.94
Primary Dyad	N	Aggressiveness		4	2.68	2.78
Primary Dyad	P	Optimism		15	10.07	10.42
Secondary Dyad	N	Despair		11	7.38	7.64
Secondary Dyad	P	Pride		2	1.34	1.39
Tertiary Dyad	N	Anxiety		20	13.42	13.89
Tertiary Dyad	N	Pessimism		7	4.70	4.86
Tertiary Dyad	N	Outrage		18	12.08	12.50
			DOCUMENTS with code(s)	144	96.64	100.00
			DOCUMENTS without code(s)	5	3.36	-
			ANALYZED DOCUMENTS	149	100.00	-

Frequency of emotional expression in Mexican wolf recovery public meeting statements according to emotional primacy.

APPENDIX G  
PREVIOUSLY PUBLISHED WORKS

Chapter Six of this dissertation “[RE]ANIMATING AND [RE]ANIMALIZING WILDLIFE CONSERVATION” appears as “[Re]animating and [re]animalizing wildlife conservation landscapes”. *A Research Agenda for Animal Geographies*. Hovorka, Alice J., McCubbin, Sandra, and Van Patter, Lauren, Eds. Cheltenham, UK: Edward Elgar Publishing Ltd. *Forthcoming*

APPENDIX H  
INSTITUTIONAL REVIEW BOARD APPROVAL

Recruitment and interviews were conducted for this research project. However primary interview data was not ultimately used in this research project.



Robert Bolin  
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Dear Robert Bolin:

On 12/27/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Factors shaping stakeholder attitudes and behaviors toward wildlife and habitat conservation in the rural and urban U.S. southwest
Investigator:	Robert Bolin
IRB ID:	STUDY00007457
Funding:	Name: null
Grant Title:	
Grant ID:	
Documents Reviewed:	<ul style="list-style-type: none"><li>• Sample interview questions 2017, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li><li>• Informed Consent 2017, Category: Consent Form;</li><li>• Factors shaping stakeholder attitudes and behaviors toward wildlife and habitat conservation in the rural and urban U.S.docx, Category: IRB Protocol;</li><li>• Recruitment letter 2017, Category: Recruitment Materials;</li></ul>

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 12/27/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Anita Hagy Ferguson



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Instructions and Notes:

- Depending on the nature of what you are doing, some sections may not be applicable to your research. If so, mark as "NA".
- When you write a protocol, keep an electronic copy. You will need a copy if it is necessary to make changes.

**1 Protocol Title**

Include the full protocol title:

Factors shaping stakeholder attitudes and behaviors toward wildlife and habitat conservation in the rural and urban U.S. southwest

**2 Background and Objectives**

Provide the scientific or scholarly background for, rationale for, and significance of the research based on the existing literature and how will it add to existing knowledge.

- Describe the purpose of the study.
- Describe any relevant preliminary data or case studies.
- Describe any past studies that are in conjunction to this study.

Increasing human development activities in the U.S. southwest have led to wildland encroachment, environmental degradation, and habitat fragmentation resulting in threatening or extirpation of wildlife. Landscape scale conservation approaches establish protected wildlife corridors that allow animals to move between fragmented habitats and roam the extent of their natural range. These approaches bring humans and wildlife into shared space and necessitate the renegotiation of coexistence and shared geographies. This renegotiation is complicated by conflict arising from changing institutions, land use, economics and ideologies, which vary depending on species, region, institutions and proposed land use. In rural AZ/NM, tensions exist over protective legislation and management policies for reintroduction of the Mexican gray wolf and designation of protected critical habitat for the jaguar. In central AZ, conflict arises over urban development that threatens wildlife habitat connectivity.

Through analysis of secondary documents and in depth semi-structured in-person interviews with participants in several different stakeholder groups (ranchers, hunters, conservation organization representatives, government agency representatives, developers) in the U.S. southwest, this research will examine the values, attitudes, behaviors and relationships that define conservation of MX Wolf and Jaguar in rural AZ/NM and protection of urban wildlife corridors in the Phoenix west valley metro area.

Our research questions are informed by a review of extant research and theory, government documents, reports and maps. We have not collected preliminary data or conducted other case studies in relation to this project. Under a previously approved and now expired 2015 protocol, research contacts were made with some stakeholders we anticipate will be respondents in the rural case study of this research project, but no data was collected. There are no studies being conducted in conjunction with this study.

**3 Data Use**

Describe how the data will be used. Examples include:

- Dissertation, Thesis, Undergraduate honors project
- Publication/journal article, conferences/presentations
- Results released to agency or organization
- Results released to participants/parents
- Results released to employer or school
- Other (describe)

The data will be used for the co-PIs Ph.D. dissertation, publications in academic journals, white papers and reports to be released to stakeholders and stakeholder organizations, conferences and presentations.

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**4 Inclusion and Exclusion Criteria**  
Describe the criteria that define who will be included or excluded in your final study sample. If you are conducting data analysis only describe what is included in the dataset you propose to use.  
Indicate specifically whether you will target or exclude each of the following special populations:

- Minors (individuals who are under the age of 18)
- Adults who are unable to consent
- Pregnant women
- Prisoners
- Native Americans
- Undocumented individuals

The rural and urban case studies look at different aspects of wildlife and land conservation, and we will interview a purposive sample of individuals in different stakeholder groups. Stakeholder groups for the rural case include ranchers and farmers, government agency representatives, conservation organization representatives and hunters or representatives of hunting and/or outdoor recreation groups. Stakeholder groups for the urban case include developers, government agency representatives, municipal representatives and conservation organization representatives.  
This study does not target pregnant women, Native Americans and undocumented individuals, however we do not foresee any risk to any participants in these groups and so they are not excluded.  
This study excludes the following participants: Minors, adults unable to consent, prisoners.

**5 Number of Participants**  
Indicate the total number of participants to be recruited and enrolled: We anticipate interviewing approximately 15-20 individuals in the rural case study and approximately 10-15 individuals in the urban case study for a total of 25 to 35 interviews.

**6 Recruitment Methods**

- Describe who will be doing the recruitment of participants.
- Describe when, where, and how potential participants will be identified and recruited.
- Describe and attach materials that will be used to recruit participants (attach documents or recruitment script with the application).

Recruitment will be done by the co-PI. Co-PI has an established relationship with some stakeholders. Co-PI will email recruitment letter to known stakeholder contacts and will utilize a modified snowball sampling technique to recruit additional stakeholder participants as follows: Co-PI will provide recruitment materials to known individuals to pass on to others they think may want to participate in the study and Co-PI will respond to those who contact her with interest in participating. Additionally, Co-PI will directly contact ranching, hunting and conservation organizations to recruit participants by asking organization representatives to distribute the recruitment letter to members.

**7 Procedures Involved**  
Describe all research procedures being performed, who will facilitate the procedures, and when they will be performed. Describe procedures including:

- The duration of time participants will spend in each research activity.
- The period or span of time for the collection of data, and any long term follow up.
- Surveys or questionnaires that will be administered (Attach all surveys, interview questions, scripts, data collection forms, and instructions for participants to the online application).
- Interventions and sessions (Attach supplemental materials to the online application).
- Lab procedures and tests and related instructions to participants.
- Video or audio recordings of participants.
- Previously collected data sets that that will be analyzed and identify the data source (Attach data use agreement(s) to the online application).

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- One-on-one in person or phone interviews will be conducted by the co-PI utilizing a semi-structured interview protocol
- Each participant will be asked to engage in an interview for approximately 30 minutes at a time of their convenience.
- Stakeholders will be asked questions relevant to a particular (rural or urban) cases for which they are a stakeholder. Some participants may be stakeholders in more than one case. Example semi-structured interview questions are attached.
- Interview data will be collected over a span of approximately four months. There is no long term follow-up included in this study.
- Interview data are the only data being collected from study participants.
- There are no interventions and sessions, lab procedures or tests involved in this research.
- Previously collected secondary data will be analyzed including academic literature, government documents, reports, maps, public meeting transcripts, organizational websites and policy documents. Secondary public data to be analyzed may include public statements by study participants, but this identifiable public data will not be directly linked to interview data.

**8 Compensation or Credit**

- Describe the amount and timing of any compensation or credit to participants.
- Identify the source of the funds to compensate participants
- Justify that the amount given to participants is reasonable.
- If participants are receiving course credit for participating in research, alternative assignments need to be put in place to avoid coercion.

We will not be providing compensation for phone interview participants. In person interview participants will be offered a bottle of water.

**9 Risk to Participants**  
List the reasonably foreseeable risks, discomforts, or inconveniences related to participation in the research. Consider physical, psychological, social, legal, and economic risks.

We do not foresee risks, discomforts or inconveniences related to participation in this research.

**10 Potential Benefits to Participants**  
Realistically describe the potential benefits that individual participants may experience from taking part in the research. Indicate if there is no direct benefit. Do **not** include benefits to society or others.

.... Our participants are stakeholders in wildlife and/or land use issues of concern in the regions in which stakeholders live, recreate or work. This research will further understanding of factors that contribute to wildlife and land use conflict and will identify potential conflict management approaches that will benefit the participants as stakeholders. This project makes a theoretical contribution to wildlife conservation and human economic development by identifying specific shared factors contributing to these conservation conflicts, which will lead to new management recommendations.

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**11 Privacy and Confidentiality**

Describe the steps that will be taken to protect subjects' privacy interests. "Privacy interest" refers to a person's desire to place limits on with whom they interact or to whom they provide personal information. Click here for additional guidance on [ASU Data Storage Guidelines](#).

Describe the following measures to ensure the confidentiality of data:

- Who will have access to the data?
- Where and how data will be stored (e.g. ASU secure server, ASU cloud storage, filing cabinets, etc.)?
- How long the data will be stored?
- Describe the steps that will be taken to secure the data during storage, use, and transmission. (e.g., training, authorization of access, password protection, encryption, physical controls, certificates of confidentiality, and separation of identifiers and data, etc.).
- If applicable, how will audio or video recordings will be managed and secured. Add the duration of time these recordings will be kept.
- If applicable, how will the consent, assent, and/or parental permission forms be secured. These forms should separate from the rest of the study data. Add the duration of time these forms will be kept.
- If applicable, describe how data will be linked or tracked (e.g. masterlist, contact list, reproducible participant ID, randomized ID, etc.).

If your study has previously collected data sets, describe who will be responsible for data security and monitoring.

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Private data will be held in strict confidentiality. The co-PI will obtain primary data from private interviews with individual stakeholders. Private interview data will include interview recordings, interview transcriptions, coded data in MAXQDA, hand written and computerized notes from co-PI. Data will pertain to individual and organizational engagement in wildlife and land conservation and related human development activities in Arizona and New Mexico, as well as aspects of participant life histories and livelihoods. Only the PI and Co-PI will have access to personal identifiers. During the project, personal identifiers will be removed from interview transcripts loaded into MAXQDA so additional coders will not have access to personal identifying information. The original interview data (audio files, transcripts and notes) will be maintained in a private Dropbox folder, which is password protected and available only to the PI and the Co-PI who are employed or are students at ASU. This will facilitate secure access to the documents by all researchers involved in the project. Interview data will be maintained as both audio files and, when produced, transcripts. Both audio files and transcripts from interviews will be de-identified using an alpha-numerical key and with a Master List. The Master List will be maintained separately as a paper document locked in the desk of the Co-PI. Names must be maintained in a Master List, as information on the role and position of the interviewee will be essential in some cases in interpreting data from the interviews. Only the PI and Co-PI will have access to the master list. Interview audio files will be recorded on portable recording devices and deleted from those devices as soon as they are uploaded into the Dropbox archive. We will not obtain video recordings of any interviews. The co-PI will conduct a content analysis of a range of *publicly available* secondary data including academic literature, government documents, reports, maps, public meeting transcripts, organizational websites and policy documents. Primary data will include both public and private information on individual respondents. This secondary data content analysis will not involve human subjects, and any identifying information in the secondary data will not be linked to data from the human subjects research (the interviews).

**Description of data** – Primary data Audio files, transcripts, master list of identifiers. Secondary data (public data): academic literature, government documents, reports, maps, public meeting transcripts, websites and policy documents.

**Responsibility** – The co-PI will have overall responsibility for data management over the course of the project and will monitor compliance with the plan. At research conclusion, the co-PI will transfer responsibility for data management to the ASU digital repository. The co-PI is trained in responsible data handling. Only the PI and Co-PI who have completed responsible conduct of research training for work with human subjects will be permitted access to primary source data.

**Designated Archive** – The research data from this project will be deposited with the digital repository of Arizona State University to ensure that the research community has long-term access to the data.

**Policies for Data Sharing** – Our access and sharing policy is designed to protect the confidentiality of research subjects. Audio or transcript files of interviews will never be made public. The co-PI will manage and keep the Master List, which matches alphanumeric designations on the tapes and file names to the name of the participants interviewed and the organization for which they work, where applicable. This Master List will be kept on paper and locked in the co-PI’s desk. The data will not be shared with third parties during the project period. All primary data will be retained by the co-PI and will not be shared with researchers outside the project research team. Only the co-PI and PI will have access to the Master List. Additional coders will only have access to de-identified data. Except as required by law, regulation or subpoena or other court order, we will not disclose consent, data or identifying information. Co-PI will obtain verbal consent from study participants so there will be no consent forms on file.

**Polices for Re-Use or Re-Distribution** – After the project period, the Dropbox account will continue to be accessible by only the PI and co-PI. When the project is officially closed out, archives from the Dropbox account will be transferred to the trust of the ASU Digital Repository at Arizona State University (ASU) who will arrange to have the data securely stored for three years after the close out of the project, per ASU policy. During this period, the investigators may still use the data. During this period only de-identified data can be shared with other researchers who contact the PIs.

**Plans for Archiving Data and for Preservation of Access** – The Co-PI’s dissertation will go into the Arizona State University institutional digital repository. All data will be coded with meta data including project title, author and year, and will include a rich description of content. Metadata will include researcher contact information and this will be updated as needed. We will place an embargo on data sharing until 1 year after the publication of research findings and dissertation. Meta data including researcher contact information will be available during embargo period. After a five-year period from the closing of the research project the Master list will be shredded, the audio files will be destroyed,

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and the investigators will search for a suitable public archive into whose trust the remaining data can be transferred to preserve access. Only de-identified data will be provided to the public trust. All participants will be informed of how to access the public access level data in the data repository and all participants will be given researcher’s contact information.

**12 Consent Process**

Describe the process and procedures process you will use to obtain consent. Include a description of:

- Who will be responsible for consenting participants?
- Where will the consent process take place?
- How will consent be obtained?
- If participants who do not speak English will be enrolled, describe the process to ensure that the oral and/or written information provided to those participants will be in that language. Indicate the language that will be used by those obtaining consent. Translated consent forms should be submitted after the English is approved.

- Interviewer will be responsible for consenting participants.
- Verbal consent will be obtained in person or via phone by the interviewer immediately prior to interview.
- Interviewer will read consent form (see attached), confirm that the participant understands the consent stipulations, and answer any questions the participant has about the informed consent or about the research project.
- There are no participants who are minors.
- All participants speak English.

**13 Training**

Provide the date(s) the members of the research team have completed the CITI training for human participants. This training must be taken within the last 4 years. Additional information can be found at: [Training](#).

PI Bob Bolin: CITI complete. Expires February 18, 2018  
 Co-PI Shauna BurnSilver: CITI completed August 19, 2015.  
 Co-PI Anita Hagy Ferguson: CITI refresher completion on December 21, 2016, Expires December 20, 2020

## INFORMED CONSENT

**Study: Factors shaping stakeholder attitudes and behaviors toward rural and urban wildlife and habitat conservation in the rural and urban U.S. southwest**

Arizona State University (ASU)

School of Human Evolution and Social Change, Tempe, AZ

PI: Bob Bolin, Ph.D.

CoPI: Shauna BurnSilver, Ph.D.

CoPI: Anita Hagy Ferguson, Ph.D. Candidate, Environmental Social Science

### **Purpose of this study:**

The goal of this study is to identify and compare factors that contribute to different stakeholder attitudes and behaviors toward wildlife and land conservation in the rural and urban southwest. This project aims to identify key areas of conflict in conservation and potential avenues for conflict resolution. This study is funded in part by the ASU School of Human Evolution and Social Change. As of now, there are no additional agencies funding this project.

### **Procedures:**

We seek your participation as a stakeholder concerned with and/or impacted by wildlife and land conservation in the southwest.

Your interview will be comprised of a series of interview questions for which you will be able to respond with descriptive answers in your own words.

With your permission, we would like to make an audio recording of your interview, which will aid in accurately reporting your responses. You may ask for recording to be stopped for particular responses or for recording to be terminated at any point during the interview.

The total time commitment is a maximum of 30 minutes' time. You must be 18 years or older to participate in this study.

### **Compensation:**

You will not receive direct financial benefits from participation in this study. However, it is our sincere belief that your participation in this study will help further understanding of complex wildlife and land conservation issues that potentially affect you as a stakeholder. The results of this research will be made available to you, and you may contact the researchers listed below at any time before, during or after the research to make comments or ask questions. We do not foresee risks or discomfort associated with your participation in this study.

### **Confidentiality**

Confidentiality will be strictly maintained by all researchers and institutions involved in this project. All interview recordings will be stored in a locked location in the Co-PI 1's personal office in Phoenix for the duration of the study and will be destroyed when the study is complete. Transcripts made from your recorded interview will not identify you by name. Except as required by law, regulation or subpoena or other court

order, researchers and ASU will not disclose your consent, data or identifying information. Transcribed interview records will be stored in a locked location at ASU. There will be no data on your interview records that identifies you.

This study is part of Co-PI 1's dissertation research. By participation in this study, you understand and agree that the data gathered during this study may be used by ASU and published and/or cited by others not at ASU. Your name, contact information (address, phone and email), and any other direct personal identifiers will not be mentioned by ASU in any such publication or other dissemination (sharing) of the research results or data.

**Rights:**

Your participation in this study is voluntary. You may decline to answer any question. You may stop the interview or other participation at any time. If you decline to participate, withdraw consent or discontinue participation in this study there will be no penalty or loss of benefits or rights to which you might otherwise be entitled. If the Principal Investigator or Co-PIs at his/her discretion removes you from the study for any number of reasons there will be no penalty or loss of benefits or rights to which you might otherwise be entitled.

You have a right to ask questions about this study. Feel free to ask questions now. If you have questions later, you may contact the researchers, in the following ways:

Anita Hagy Ferguson (Co-Principal Investigator 1)

Via email: [anita.hagyferguson@asu.edu](mailto:anita.hagyferguson@asu.edu)

Via mobile phone: 541-324-2952

Shauna BurnSilver (Co-Principal Investigator 2)

Via email: [shauna.burnsilver@asu.edu](mailto:shauna.burnsilver@asu.edu)

Via office phone: 480-965-5992

Bob Bolin (Principal Investigator)

Via email: [bob.bolin@asu.edu](mailto:bob.bolin@asu.edu)

Via office phone: 480-965-6421

Via U.S. mail: Arizona State University  
School of Human Evolution and Social Change  
PO Box 872402, Tempe, AZ 85287-2402

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

**Voluntary Consent:**

To maintain your confidentiality, we do not ask for your written consent. Your participation in the interview serves as your consent to take part in this research study.



## **Invitation to Participate in Research**

I am a graduate student under the direction of Professor Bob Bolin and Professor Shauna BurnSilver in the Environmental Social Science program in the School of Human Evolution and Social Change at Arizona State University.

I am conducting a research study on factors that contribute to different stakeholder attitudes and behaviors toward wildlife and land conservation in the rural and urban southwest. This study involves interviews with individuals concerned with and/or impacted by wildlife and land conservation in the southwest.

We are recruiting individuals to participate in interviews. The total time commitment will be a maximum of 30 minutes for one interview. All interviews will be confidential and no personal identifying data will be shared. You must be 18 years or older to participate in this study. Your participation in this study is voluntary and you may stop your participation at any time.

We will share results of this study with all participants.

If you would like to participate in this study, or if you would like to learn more about the study, please contact:

Anita Hagy Ferguson  
Email: [Anita.hagyferguson@asu.edu](mailto:Anita.hagyferguson@asu.edu)  
Mobile: 541-324-2952.

Thank you for your consideration.

Warm regards,

Anita Hagy Ferguson

Study Title: Factors shaping stakeholder attitudes and behaviors toward rural and urban wildlife and habitat conservation in the rural and urban U.S. southwest.

Arizona State University (ASU)

School of Human Evolution and Social Change, Tempe, AZ

PI: Bob Bolin, Ph.D.

CoPI: Shauna BurnSilver, Ph.D.

CoPI: Anita Hagy Ferguson, Ph.D. Candidate, Environmental Social Science

APPENDIX I  
FUTURE RESEARCH STATEMENT

## Summary

Central Arizona was settled amid a driving force to expand, conquer, manipulate and control the geophysical, human, and non-human animal elements of the Southwest. Longstanding narratives of the desert as ugly, barren and lifeless have led to extensive exploitation and reclamation of Sonoran desert lands for development in central Arizona, and the formation of the expansive Phoenix, Arizona metropolis. Counter narratives of the Sonoran Desert as biodiverse and beautiful are now broadly embraced, and central Arizona is well-recognized and appreciated for its natural desert bounty, with many residents citing nature and outdoor recreation as the region's top asset (CAZCA 2018). Despite broad contemporary recognition of the Sonoran Desert as valuable, regional growth ensues at a rapid pace, with many developers and investors continuing to plan and build in a manner that compromises the desert ecosystem and by extension the desert's regulatory, resource, and cultural ecoservices. Though sustainable development would advantage communities, developers are slow to embrace sustainable designs and technologies that could protect the desert, enhance ecosystem services to people, reduce developer risk, and potentially increase developer return on investment.

The White Tank Mountains (WTM) are located in the Sonoran Desert at the western edge of the Phoenix metropolitan area and the eastern edge of the largely undeveloped Lower Hassayampa River Valley (LHRV). The WTM are an ecologically thriving wildlife habitat block. Wildlife move seasonally between the WTM, across the LHRV, to neighboring mountains, following natural river and wash corridors to find mates, food and shelter. This valley is one of the fast-growing areas in the U.S. (Maricopa Association of Governments 2005). Planned development will disrupt riparian

systems, fragment the LHRV, and isolate the WTM; compromising the ecological integrity of the region.

Most lands in the LHRV have been sold to private developers (City of Buckeye 2016) or are state lands targeted for future sale to developers. A water diversion canal and arterial roads bisect this landscape, with scoping for an Interstate highway underway. Maintaining regional ecological and recreational connectivity amidst broad development requires a regional scale approach, but there is typically little collaboration amongst developers, who typically plan concentric communities that are isolated from nature.

Over the last several years I have worked as a consultant for the White Tank Mountains Conservancy (WTMC) to synthesize a regional vision for the LHRV that leverages the network of extant river and wash corridors and flood plains to transport flood flows, provide drainage for environmental integrity and development, and serve as wildlife habitat and movement corridors (Warnecke 2016). This research was originally intended to be part of this dissertation, and preliminary background research was submitted to my committee for review. Including the two case studies proved too much for a single thesis, given the extensive analysis that went into the one case study that is included. Therefore, I intend to complete this research post-doctoral.

There is currently broad collaboration on a regional approach to development in the LHRV that includes an Area Drainage Master Plan that proposes green infrastructure alternatives (MCFCD 2007) and an extensive regional parks and trails connectivity plan (MCPRA 2014). While these efforts have fostered extensive regional, state and federal collaboration, developers remain reluctant to collaborate on a regional scale sustainability plan. Developers face significant environmental challenges, including water scarcity and

flash flooding. A proactive focus on policy, planning and operations in collaboration with government agencies, conservation scientists and sustainability designers and engineers would allow developers to explore application of new designs and technologies that save them money on infrastructure in the short term and minimize risk in the long term (World Economic Forum 2016). However, developers are often focused on measurement and reporting rather than strategizing and guiding sustainable development (World Economic Forum 2016). This focus limits developer opportunity to achieve sustainability in practice. Significant knowledge gaps exist on regional ecology and sustainable development alternatives, and this dearth of knowledge has led to communities being planned and developed in isolation, with little regard for broad ecological impacts or opportunities afforded by regional planning.

My future research involves conducting interviews with stakeholders to assess their perceptions and values of open space, connectivity, and wildlife. Using an Integral Ecology framework, I will link these interiors to behavioral and systemic terrains. The analysis will aid in evaluating stakeholder willingness to accommodate regional wildlife corridors and to entertain alternative infrastructure and development design to accommodate the corridors. This data will be used to refine communications, highlighting the broader value of wildlife corridors by addressing use-and non-use value of urban-adjacent natural desert lands and by assessing risk perceptions held by land-use decision makers. This research aligns with other important wildlife connectivity efforts in the U.S. including the Western Wildway Network, The Western Governors Wildlife Corridor Initiative and the Wildlife Corridors Conservation Act of 2019 (introduced).

Physical Geography of Research Area  
 (Hassampa River Valley/Lower Colorado  
 River Valley/Sonoran Desert)

The Mogollon Rim marks the northern edge of the Sonoran Desert, which is characterized by low elevation valleys and long rims of thin mountain ranges (Nabhan 1999b). The Sonoran Desert stretches across 100,000 square miles of the Southwest and encompasses nearly all of the southern half of Arizona, the southeastern part of California, most of the Baja California peninsula, the Gulf of California islands, and the northwestern portion of Sonora, Mexico



Figure 1. The Lower Colorado River Valley is located in the north central region of the Sonoran Desert. It includes the Phoenix metropolitan area, site of case study two. Image Source: (Arizona-Sonora Desert Museum 2006).

(Nabhan 1999b) (Figure 1). Though the Sonoran Desert receives comparatively more rainfall than most deserts (ten to twelve inches annually), large parts of the Sonoran Desert are extremely hot and dry (Arizona-Sonora Desert Museum 2006).

Typically regions that are cold, hot or dry such as mountaintops or deserts have less biodiversity than tropical or temperate regions, but the Sonoran Desert stands out as

a top biodiversity contender.<sup>248</sup> The Sonoran Desert region has enormous variability of plant and animal lifeforms, and with every biome represented, it has exceptional landscape diversity (Dimmitt 1999). It is thought to have greater species diversity than any North American desert (NPS 2016) and greater diversity of plant growth forms (structural adaptations for survival) than any desert in the world (Nabhan 1999a). The great biodiversity of the Sonoran Desert is attributed to the region's sub-tropical climate, varied topography and geology, bimodal (dual-season) precipitation, and geographic connectivity (NPS 2016).

The Sonoran Desert region serves as a transition zone between two mountain ranges (the Sierra Madres and the Rockies) and two coasts (the Pacific and Gulf). It connects to two other deserts (the Mohave and the Chihuahuan), and connects the Baja coastal lowlands and the midcontinent (NPS 2016). A gradual transition between tropical and desert lands makes the Sonoran Desert a dynamic liminal space providing habitat for a surprising variety of wildlife including typical arid landscape dwellers like reptiles, hooved animals like big horn sheep, mule deer and javelina and characteristically tropical dwellers such as coatimundi and limited numbers of several endangered cats: jaguar, jagarundi, and ocelot (Phillips and Wentworth Comus 1999). The Sonoran Desert region has one of the highest pollinator populations and the highest breeding bird density recorded anywhere in the world (Phillips and Wentworth Comus 1999).

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<sup>248</sup> There is no scientific consensus on what constitutes biodiversity. Assessments of biodiversity take into account multiple aspects of variation in ecosystems, plant and animal richness, complexity of interactions, diversity of species, and genetic diversity within and between species Nabhan, G. P. 1999. Biodiversity: The variety of life that sustains our own. In *A Natural History of the Sonoran Desert*, eds. Steven J. Phillips & Patricia Wentworth Comus. Arizona-Sonora Desert Museum Press, Tucson and University of California Press, Oakland. This dissertation utilizes a broad definition of biodiversity as the variety of living species on Earth and the living systems (ecosystems) they form.

Far from barren and desolate, the Sonoran Desert is a convergence of life. It is a meeting place of natural forces, and it is teeming with vitality. For millions of years vital forces have traveled through winds, water, and wildlife flowing through the desert via a meshwork of connected rivers, washes, flood plains, canyons, and valleys (Van Devender 2017). Though conservation of the Sonoran Desert started later than conservation of forested areas in Arizona and New Mexico, acknowledgement of the Desert's great biodiversity and fragile ecosystem has led to strong efforts to protect it (Nabhan 1999a; Desert Botanical Garden 2018).

The Hassayampa River Valley is within the Lower Colorado River Valley subdivision of the Sonoran Desert, which includes the Gila and Salt River Valleys. It is the hottest and driest portion of the Sonoran Desert (Phillips and Wentworth Comus 1999). The average 2017 high temperature during the summer months in the Phoenix metropolitan area was 106°F (National Centers for Environmental Information 2018)<sup>249</sup>. Summer high temperatures can exceed 120°F with surface temperatures exceeding 180°F (Phillips and Wentworth Comus 1999), and it is not uncommon for the Phoenix area to sustain temperatures exceeding 115°F for multiple consecutive days (National Centers for Environmental Information 2018). Temperatures in the area are increasingly high. Nine of the ten warmest years on record for the Phoenix area have been in the 21<sup>st</sup> century (National Weather Forecast Office 2018). Intense solar radiation creates very low humidity (it can be lower than 10%) and hard, high mineral soils that are slow to absorb water (Phillips and Wentworth Comus 1999).

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<sup>249</sup> Summer months are calculated as June, July and August.



Paradoxically, this very hot and dry region is also prone to flooding, and this flooding is important to the ecological balance of the Sonoran Desert. Water in the Lower Colorado River Valley of the Sonoran Desert is characterized by intermittent streams and dry washes in the valleys which connect either to a major through-running river (the Gila River or Salt River) or drain into a low spot such as a dry lake bed (Scarborough and Brusca 2015). Though these waterways are typically dry in the summer months, during the winter and summer rainy seasons they can rush with water. Winter season typically brings widespread and gentler rains while summer season typically brings heavy monsoon surges that sometimes push giant walls of dust across the valley (Scarborough and Brusca 2015). Rain in this region, particularly monsoon rain, can be extremely heavy and concentrated, and can cause flows of heavy rock, mud, and vegetation to cascade rapidly down steep narrow canyons in mountains (Scarborough and Brusca 2015). Upon reaching the base of mountains, flows tend to spread out sending waters across flood plains in multiple directions, forming a networks of stream corridors (washes) from apexes, and often flooding the flatlands (Scarborough and Brusca 2015). These washes are termed *alluvial fans* due to the way they fan out across the landscape (Scarborough and Brusca 2015). The distributory nature of these washes effectively transports water and soil and vegetation broadly across the landscape, facilitating spread of seed and nutrients and recharging of ground water. These washes are dynamic and change direction over time serving water to different parts of the desert landscape.

Wild animals rely on rivers, streams and washes for water, food and shelter as they migrate seasonally across valleys to and from different mountain ranges (AZGFD 2011). Migrating animals disperse seed throughout their ranges serving an important role

in sustaining biodiversity of the region's flowers, trees and plants (Delaney et al., 2010; Reed, 2004). Water and wildlife are the metaphorical lifeblood of the desert, and the complex system of rivers and washes can be likened to a vascular system that functionally serves the desert body. Damming of rivers, cementation of natural washes and construction of diversion channels has disrupted vital flows of water and wildlife in the desert analogous to how application of a tourniquet arrests blood flow. Habitat fragmentation from urban expansion has been identified as the number one threat to the fabric of the Sonoran Desert (Phillips and Wentworth Comus 1999).

The White Tank Mountains are so named for the white granite cliffs that once surrounded depressions or “tanks” in the white granite rock below (Krause 2015). The depressions are caused by heavy rains and flash floods that pour through the ridges and canyons and drop off ledges in rushing waterfalls. Storms forced the eventual caving of the granite cliffs (Krause 2015)<sup>250</sup>. The White Tanks sit in the Lower Gila River watershed, and the drainage network to the west of the White Tanks is comprised of a dynamic network of rivers and numerous alluvial fan washes (MCFCD 2007). Most storm water from the White Tanks flows west across the lowlands into the Hassayampa River through natural wash networks and human made diversion and flood control structures (MCFCD 2007).

Current urban development practices result in environmental degradation, habitat encroachment, and fragmentation. Transportation infrastructure reduces connectivity for

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<sup>250</sup> The tanks stored water, and as early as 1863 the White Tanks appeared on maps as a watering hole for travelers. Krause, K. 2015. History of Waddell, Arizona. <https://waddellhistory.wordpress.com/2013/04/23/how-the-white-tank-mountains-got-their-name/>. (accessed 21 May 2015).

wildlife and increases wildlife roadway mortalities (AZGFD 2012). Damming, cementation of natural washes, and diversion channels disrupt vital flows of water and wildlife. Altered surface hydrology and groundwater depletion are top stressors of AZ wildlife as these activities impact the quantity and timing of stream flow, which in turn alters important plant and animal habitat necessary for species survival (AZGFD 2012). Fragmentation limits interaction among plant pollinators and seed dispersers, negatively impacting a wide variety of co-dependent flora in the desert (Nabhan 1999a), which can disadvantage native species and influence extinctions (Venier and Fahrig 1996; Reed 2004; Delaney et al. 2010). An estimated 60% of the Sonoran Desert is now dominated by roughly 308 different invasive species (Nabhan 1999a). Habitat fragmentation from urban expansion is the number one threat to the fabric of the Sonoran Desert (Phillips and Wentworth Comus 1999).



*Figure 2.* The Hassayampa River Valley river and wash system. Wildlife migrate seasonal between mountain ranges following the valleys network of rivers and washes. The White Tank Mountains are bordered to the south and east by the phoenix metropolitan area (Warnecke 2018).

Arizona Game and Fish Department (AZGFD) initiated earnest connectivity planning for the LHRV eleven years ago (Warnecke 2016) when the area faced a development boom. Using a predictive corridor modeling approach, AZGFD identified the most suitable linkages for a broad suite of species to connect to large undeveloped habitat blocks around the LHRV (Warnecke 2016). The linkages would simultaneously protect wildlife and plant habitat, secure ecological and recreational connectivity, and promote water conservation, flood control and urban heat mitigation. The linkages,

would preserve ~171,000 ac in whole or part of intact, ecologically thriving lands across ~300,000 ac of Sonoran Desert. As planned urban development will occur throughout the LHRV, the Hassayampa River corridor may become the single most natural ecological linkage between the Gila River refuge to the south and U.S. National Forest and BLM lands to the north. These river corridors will become the backbones of a regional open space system if conservation efforts are realized.

## BIOGRAPHICAL SKETCH

Anita Hagy Ferguson is an Environmental Social Science Ph.D. candidate with an academic background in anthropology, animal geography, human communication, western philosophy, and conservation social science. She has a professional background in collaborative landscape-scale wildlife and open space conservation.