

The Mustang Dilemma:
Facts, Values, and Decision Making
in Arizona's Heber Wild Horse Territory

by

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ABSTRACT

Over the past several decades, the dilemma of free-roaming horses in the U.S. has proven to be one of the most divisive issues in management of public lands. According to federal land management agencies, without population regulation, horses can increase at the rate of 15-20% a year on arid rangelands with inadequate numbers of natural, large predators. Horses compete for valuable forage and water resources alongside cattle and native wildlife in delicate riparian areas highly susceptible to the negative ecological effects of soil compaction and overgrazing. Most U.S. management policies, therefore, call for increased removal of free-roaming horses as they are categorized as "un-authorized livestock" or "non-native" species. Wild horse advocates, however, continue to petition for improvement in animal welfare and expansion of the horses' territory. With heightened social conflict spurred by animal rights and ecological concerns, not to mention the often-stark differences over what really "belongs" on the landscape, the success of appropriate management strategies hinges on managing agencies' preparedness and ability to respond in a timely and inclusive manner. A critical element of the management context is the public's views toward the wild horse and the science used to manage them. Synthesizing the vast literature in the history and philosophy of wildlife management in the American West, and utilizing an ethnographic and case study approach, my research examines the range of stakeholder concerns and analyzes the factors that have led to the disconnect between public values of wild horses and public policy for the management of the federally protected free-roaming horses in Arizona's Apache-Sitgreaves National Forests.

DEDICATION

This thesis is dedicated to my beloved family, those here on earth and beyond. To my father, the farmer and educator, who instilled in me my curiosity for science, my delight in all things western and my passion for wilderness and the wide-open prairie. May the sun shine warm upon your face and the rains fall soft upon your fields. Until we meet again, Pap, I will always dream of you riding 'Pony Boy' across the sagebrush and into the sunset. To my mother, the teacher, who endlessly embraced life with a smile, and lovingly encouraged me to pursue my goals, to fight for what I believe in, and to make every moment in life count. Grammy, your gift of music and laughter will continue to ring through my home forever. To my big sisters, Camille and Christy, who reminded me that I was braver than I believed and stronger than I seemed, who offered love and a sense of humor when I needed it most, and who taught me to just "do it afraid." There is nothing like the bond of sisterhood. And to my children, Kyle, Kiki, Delaney and Cayden, my endless source of joy and pride. While I have been privileged to have had the opportunity to pursue my passion for wild horses, I have been far luckier to have had the opportunity to be your mom and remain forever young and "wild at heart" with all of you. And, of course, to my love, Patrick, the guy who can jump on a horse bareback and herd cattle, the guy who always remains calm during the storm, and most definitely the guy I want on my team when this world ends. I love you with all my heart.

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My journey into this topic began with my introduction to environmental law and property rights, where Karen Bradshaw guided this naïve wildlife biologist. While I was under the impression that an understanding of ecological science could solve the wild horse management debate, Karen instilled in me the importance of addressing those voices who have been silenced for decades. The various social and ecological narratives embedded within the Old and the New West would play an important role in the Collaborative Working Group's efforts moving forward. Thank you for your continued inspiration, Karen, not only as a legal expert, but as a mentor and friend. Your encouragement has given my voice the strength it needs to speak out against inequity to provide justice for humans and non-humans.

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While the possibility of moving mustangs out to our farm in western Oklahoma drew me to this project, it was the opportunity to participate as an observer in the Heber Wild Horse working group that provided me with the opportunity to dive deeper into the management of mustangs in the American West. Those trips to the White Mountains and the Black Mesa Ranger District evolved into many lasting friendships. I would like to thank all the working group members for their interviews and the stories you shared, the U.S. Forest Service and cooperating agencies for their patience and good humor, and especially Southwest Decision Resources and Larry Fisher for allowing me to participate as an observer. Thank you Andi, Carrie, and Abby for welcoming me into the group and for demonstrating all the aspects of collaborative learning. I'd like to thank former classmate, Bob Birkland, from AZ Game and Fish for providing his view on the recent history and management of the horses. I am ever grateful to Rodney Porter who spent the entire day with me observing the horses, and to Larry Gibson for sharing the old ranching stories. I would also like to extend a special tribute to Ethan Ellsworth who guided me through the forest where the horses roam and where his ancestors lived. His gentle spirit and kind heart for others will be sorely missed. A special thanks to Tice Supplee of the Arizona Elk Society for her insights into the debate. Thank you also, Tolani Francisco, for all the extra time you spent with me. Your indigenous narrative into this debate and unique insights have been inspirational to me. Jacquie Hughes and Mackenzie Gleave assisted my wild horse observations and assessment in the Salt River Riparian area. The president of the Salt River Wild Horse Management Group, Simone Netherlands, also educated me on the detailed labors of their approach towards horse management. Thank you to the Heber Wild Horse Group, especially Mary Hauser, for sharing your insights. Finally, I am grateful to John Hall for sharing his expertise on the welfare of wild horses removed from the range.

TABLE OF CONTENTS

| | Page |
|--|------|
| LIST OF FIGURES | x |
| PREFACE | xii |
| CHAPTER | |
| 1 INTRODUCTION | 1 |
| Where the Wild Things Roam..... | 1 |
| Dominion over Nature | 3 |
| Rewilding Our Minds..... | 4 |
| Deconstructing Nature..... | 8 |
| A Horse of a Different Color..... | 11 |
| Bio-Social Encounters: Transformations of the American Mustang | 12 |
| The Servant Horse: Utilitarian Value..... | 16 |
| The Feral Horse: A Wild Rose by Any Other Name | 17 |
| The Healing Horse: Spirit of the Wild | 18 |
| The Companion Horse: Faithful Allies..... | 20 |
| The Broad Outline of the Wild Horse Management Debate | 22 |
| A Home on the Range..... | 22 |
| Tools in the Agency Toolbox: Healthy Horses on Healthy Range | 25 |
| Empathy, Welfare, and Justice for All..... | 29 |
| Current Policy: Unintended Consequences | 35 |
| Effective Policy and Social Legitimacy | 37 |
| The Heber Case | 41 |
| Controversy | 42 |
| Wild Horse Territory Study Site..... | 43 |
| Fire and Transformation..... | 46 |

| CHAPTER | Page |
|---|-----------|
| Protected Wild Horses or Unauthorized Livestock..... | 49 |
| Litigation and Collaboration | 50 |
| Corralling the Project..... | 51 |
| Driving Questions of this Study | 53 |
| Research Purpose | 56 |
| Methodological Approach | 57 |
| Qualitative Analysis..... | 59 |
| The Trail Ahead | 64 |
| 2 DANCES WITH HORSES | 70 |
| Legends of the Good, the Bad, and the Ugly | 70 |
| The Evolution of an Ecosystem Engineer | 75 |
| The Demise and Return of a Native | 76 |
| An Alternative Narrative | 79 |
| The Wild and Feral Debate | 81 |
| Horsepower, Wealth, and Prestige..... | 87 |
| Multiple Use and Non-Profitable Herds | 91 |
| Vanishing Species | 93 |
| 3 CONSERVATION AND THE WELL-BEING OF WILD CREATURES..... | 95 |
| Nurturing Nature for a “Rosy” Future | 95 |
| Caring for Animals: Two Divergent Paths | 102 |
| Wellbeing or Rights?..... | 107 |
| Tracking Individual Lives..... | 110 |
| The Herd Effect: Fitness of Feelings? | 113 |
| A Cry in the Wilderness | 116 |
| Measuring “Good” Welfare | 121 |

| CHAPTER | Page |
|---|------|
| The Rise of Compassionate Conservation | 126 |
| Science, Philosophy and Compassion: Working Towards a Common Goal. | 134 |
| 4 MANAGING WILD HORSE POPULATIONS: WELFARE AND INVISIBLE HARMS | 141 |
| “Do Nothing” Approach: Freedom to Live a Natural Life..... | 141 |
| Freedom from Fear | 147 |
| Environmental Enrichment and the Loss of Freedom | 148 |
| The Right to Autonomy: Genetic Concerns | 151 |
| 5 CONTROLLING NATURE: REWILDING UNCERTAIN FUTURES..... | 160 |
| Ecosystem Composition and Function | 167 |
| The Difficulties in Managing a Cultural Icon | 175 |
| Forever Wild and Native..... | 179 |
| Overabundance: Invasions from Within..... | 184 |
| Safe Nature Spaces and Human Involvement | 187 |
| Rewilding Foundations | 191 |
| The Practice and Ethics of Rewilding | 195 |
| The Rise of the Mega-Herbivores..... | 200 |
| Equids as Ecosystem Engineers | 201 |
| A Research Agenda for Rewilding Equids: Integration into Policy | 203 |
| Nature Reconstruction: A Path Forward to Collaboration..... | 205 |
| 6 WILD HORSE POLICY: THE “NEXT” WEST | 207 |
| Seeking Protection as an Endangered Species..... | 207 |
| Culture Clashes and the Frontier Myth | 215 |
| The “Natural West”: Home on the Range..... | 220 |
| Rangeland Management Disputes and Public Land Grazing | 224 |
| Evolution of Rangeland Management Statutes..... | 230 |

| CHAPTER | Page |
|---|------|
| Captured By a Myth | 239 |
| Partnerships and Collaboration | 246 |
| Mustang Protection in the New West..... | 249 |
| Old West and New West: Trust and the Merging of Values | 260 |
| 7 THE HEBER HORSES: TRUST AND LEARNING THROUGH COLLABORATION .. | 266 |
| Compliance Through “Fear then Relief”?..... | 266 |
| Conflict and Collaborations..... | 273 |
| Successful Collaborations..... | 277 |
| The Heber Wild Horse Territory Collaborative Working Group | 279 |
| Formation of the Working Group | 282 |
| Interview Process and Selection of Interviewees | 283 |
| Assessment of Potential Working Group Members..... | 283 |
| The Heber Horses and the Contested Meaning of Nature | 284 |
| Working Group General Recommendations for the Heber Wild Horse Territory | 286 |
| Horse Population: Origins and Numbers | 287 |
| Multiple Use: Ungulate Forage Allocation..... | 288 |
| Desired Ecological Conditions | 289 |
| Science And Management | 290 |
| Trust and Transparency | 291 |
| Response from Participants and the Public..... | 296 |
| Rights of Horses and Duty to the Landscape | 299 |
| Moving Forward | 301 |
| Develop Private-Public Partnerships..... | 301 |
| Challenges Noted | 302 |

| CHAPTER | Page |
|---|------|
| Empathy and Equity for All..... | 302 |
| 8 EPILOGUE: FINDING A HOME ON THE RANGE | 305 |
| REFERENCES | 320 |
| APPENDIX | |
| A HUMAN CONSTRUCTED TERMS APPLIED TO FREE-ROAMING HORSES ON WESTERN PUBLIC RANGELANDS HINDERS ABILITY TO REACH AGREEMENT ON MANAGEMENT OF FREE-ROAMING HORSES | 367 |
| B HEBER WILD HORSE TERRITORY WORKING GROUP – KEY THEMES AND DESIRED MANAGEMENT..... | 373 |
| C MANAGEMENT AREAS FOR FREE ROAMING EQUIDS..... | 398 |
| D HERD AREA STATISTICS | 400 |
| E IRB APPROVAL..... | 402 |
| F INTERVIEW FRAMEWORK | 404 |
| G 2 ND ROUND OF INTERVIEW QUESTIONS OF WORKING GROUP MEMBERS.... | 409 |
| H QUALITATIVE ANALYSIS | 414 |

LIST OF FIGURES

| Figure | Page |
|---|------|
| 1. The Author Observing Salt River Wild Horses | 1 |
| 2. Band of Wild Horses forage in the Apache-Sitgreaves National Forests | 41 |
| 3. Map of Heber Wild Horse Territory | 45 |
| 4. Geographical Information System (GIS) Vegetation Structural-stage-modeling Was Completed on Representative Stands Within the Territory to Estimate What Would Occur as the Trees in This Burned Area Regenerate | 47 |
| 5. The Rescue of 8-Week-Old "Rosy" | 95 |
| 6. Under Drought Conditions Groups, Private Individuals, Permittees, and Arizona Game and Fish Continue to Haul Water to Wildlife, Livestock, and Horses in the Sitgreaves National Forest from Show Low and West to Heber-Overgaard..... | 141 |
| 7. A Helicopter Guides a Group of Wild Horses into the Wings of the Trap as a Part of the Desatoya Wild Horse Gather | 148 |
| 8. Captive Mustangs in BLM's Holding Facility, Carson City, NV | 149 |
| 9. Horses Graze Peacefully in a Pasture in Riverside, Wa, Despite the Rapid Approach of Flames and Heavy Smoke from the Tunk Block Portion of the Okanogan Wildfire..... | 160 |
| 10. Heber Wild Horses Remain at the Site of the Shooting of One of Their Band Members in the Heber Wild Horse Territory in the Apache-Sitgreaves National Forests | 266 |
| 11. Heber Wild Horses and Elk Sharing Water..... | 293 |
| 12. Murphree Observing Several Wild Horse Bands in Sand Wash Basin Herd Management Area | 305 |
| 13. George Catlin's Painting <i>Wild Horses at Play</i> | 308 |

| Figure | Page |
|--|------|
| 14. Chance Encounter with a Wild Stallion in the Sand Wash Basin Herd Management Area..... | 312 |

PREFACE

Historians and prophets share a common commitment to finding the meaning of endings. However much we understand that an ecosystem transcends mere humanity, we cannot escape the valuing process that defines our relationship to it... To try to escape the value judgments that accompany storytelling is to miss the point of history itself, for the stories we tell, like the questions we ask, are all finally about value. So it is with questions that I will end... What do people care most about in the world they inhabit? How do they use and assign meaning to that world? How does the earth respond to their actions and desires? What sort of communities do people, plants, and animals create together? How do people struggle with each other for control of the earth, its creatures, and its meanings? And on the grandest scale: what is the mutual fate of humanity and the earth? Good questions all, and starting points for many a story. (Cronon, 1992, p. 1376)

Home on the Range: Where the Horses and the Antelope Play

The social landscape of wildlife management is being reshaped by a shift in values which has led to recent public outcries from the public over federal and state wildlife management agencies' ability to manage wildlife. This paradigm shift has prompted a call for organizational change. As this process continues to evolve, wildlife agencies in North America are seeking new ways to remain relevant, focusing primarily on how they might expand support for their ongoing work (Sullivan & Manfredo, 2022). While the proper formula for managing wildlife seemed straightforward when I entered graduate school, the texts in use at that point in wildlife and range management courses suggest otherwise. Paul Krausman's *Wildlife Management* and J.L. Holechek's *Range Management: Principles and Practices* outline essential tools and management tactics required to implement conservation biology theory, habitat management, and proper grazing techniques (Krausman, 2002; Holechek et al., 1989). Future wildlife managers are instructed to support a conservation agenda that includes the development of a plan to sustainably manage healthy, native ecosystems, while providing for multiple use. To accomplish this, policy dictates that managers remain ever cognizant of the various needs of native species – including the distance to water, escape cover, shelter, and available forage

– and further requires that managers monitor inter/intra species competition – including diet overlap, and the delicate balance of natality and mortality. The overarching goal is to manage habitat for as much biodiversity as possible.

As I was soon to find out, this line of thinking would prove inadequate for our ability to understand the deeper questions involved in the management of a species which is entangled in one of the largest conservation conundrums in the Western U.S. The animal at issue here, *Equus caballus*, is the legendary wild horse of North America’s rangelands: the American mustang. For over fifty years, this iconic wild spirit of America has been federally protected as a cultural heritage species. Like the Bald Eagle, the mustang is recognized in U.S. policy and guarded by law as an important symbol of freedom (Audubon Center for Birds of Prey, n.d.).

While Krausman and Holechek et al.’s (1989) influential wildlife technique manuals provide valuable information on the history of grazing and catalogue and describe all forms of native and exotic wildlife, they provide no discussion of the ecological role of equids. Even though paleo-ecological evidence supports the notion that the horse evolved in the American West over 5 million years ago and has roamed public lands for over three centuries, no mention of the wild horse can be found except under the definition of “feral” in the index. The difficulty in managing this unique, charismatic wild equid becomes further evident as this ownerless and unbranded animal appears to hover between a classification that is neither domestic nor wild and claims a shifting title that elevates or demotes the species to either a native or non-native status. Such a role, in the disparate views of the public, is both privileged and condemned. Wild equids illuminate an iconic image of freedom, wildness, and power, but also carry the burden as a ward of the state or an unwanted pest to be despised and destroyed. Evidence of these confusing categories

can be seen in existing policies. The public's disapproval of current management of the American mustang is proof that a policy adjustment is needed (Philipps, 2017).

My involvement with the mustangs began in Spring of 2015. The BLM, in their search for possible public approved solutions, announced that it was seeking contractors for off-range pastures in 14 Western states to provide suitable habitat and compassionate care for the perceived overabundance of wild horses removed from Western public lands. According to the BLM, the alleged chronic wild horse overpopulation has increased the risk of damage to rangeland resources, and the possibility of starvation and dehydration for all wildlife. Off-range pastures would provide a more cost-effective, efficient, and humane approach towards the removed horses, currently confined to short-term holding corrals. Additionally, these newly established pastures would provide the public with opportunities to view wild horses in a "natural" setting or adopt animals into private care. In such an arrangement, the BLM would award multiple contracts to landowners who could accommodate 200 – 5,000 wild horses, with several stipulations and a four or nine-year renewal option (Bureau of Land Management, n.d.f).

This new land agreement could potentially offer the solution managers had been looking for: a chance to provide what appears to be good welfare for America's free-roaming horses and – at the same time – relieve the grazing pressure on Western rangelands. For anyone with farmland, this might be a prime opportunity to provide government assistance in the effective management of wild horse populations. I happen to have a farm on the prairie: roughly 1,400 acres of mixed grasslands located in northwestern Harper County, Oklahoma. I wondered, could this land offer a remedy – a "home on the range" for the iconic wild American mustangs?

While taking on roughly 200 horses was the requirement to participate in this admirable endeavor; my gut questioned such a scenario. Do wild, free-roaming

horses *belong* on the Oklahoma landscape? What role in the ecosystem would they play? Would their welfare needs be met? How had over a century of farming and the absence of fire disrupted these mollusk soils and altered native biota? And finally, how might my interpretation of past human history on this landscape affect my decision making? As historian William Cronon reminds us:

If the way a narrator constructs a scene is directly related to the story that narrator tells, then this has deep implications for environmental history, which after all takes scenes of past nature as its primary object of study. If the history of the Great Plains is a progressive story about how grasslands were turned into ranches, farms, and gardens, then the end of the story requires a particular kind of scene for the ascending plot line to reach its necessary fulfillment. Just as important, the closing scene has to be different from the opening one. If the story ends in a wheatfield that is the happy conclusion of a struggle to transform the landscape, then the most basic requirement of the story is that the earlier form of that landscape must either be neutral or negative in value. It must *deserve* to be transformed. (Cronon, 1992, p. 1354).

Ghosts of Competition Past

I admire all kinds of country...But when I strike the open plains, something happens. I'm home. I breathe differently. (Cather, 1921)

Gazing across the gypsum hills of western Oklahoma on a hazy winter afternoon, my tired, wind-beaten eyes settle back on my family's 1901 homestead, barely standing and home now to cattle seeking refuge from the cold, and barn swallows with a propensity for sheltering in urban dwellings. Settled atop the high plateau – dubbed "Heartbreak Ridge" by my father – the estate is flanked by two rivers: the Cimarron (which flows through the landscape of rocky, red canyons to the east) and the Beaver (which lazily meanders through the high plains and rolling hills to the west). Characterized by low, irregular precipitation and high winds, this area is dominated by short grasses. The few, isolated trees and shrubs that do exist occur in deeply eroded ravines and canyons.

Roughly 250 miles southeast, predecessors of the Kiowa, Cheyenne, and Arapaho peoples hunted Bison and pronghorn on these vast prairies and likely used

fire as a management tool. Spanish explorer Francisco Vásquez de Coronado is said to have trekked through the area in 1541 hoping to find gold. Escaped horses, known locally as “Cimarrons” or “mustangs,” established themselves within the vast plains, ridges and arroyos (Dobie, 1934). Officially established as the Cherokee Outlet, this treeless, isolated landscape had originally been set aside for the Cherokee Nation in the treaties of 1828 and 1835. Motivated by gold and land, Congress passed the Indian Removal Act in 1830. The forced removal was known as the “Trail of Tears,” when approximately 100,000 indigenous peoples (belonging to Cherokee, Creek, Chickasaw, Choctaw, Seminole and other nations) were forced to relocate to land west of the Mississippi River. The Cherokee Outlet was later opened for non-Indian settlement in 1893 (A.O. Turner, n.d.).

Such is the bloody legacy of the terrain my great-grandfather homesteaded nearly a decade before Oklahoma became a state. Just sixteen at the time, he was too young to lay claim to his own parcel when the family journeyed from Missouri in 1901 in search of fertile lands out west. In less than 25 years, however, most of the 1,462 acres his father, brothers, and sisters “proved up” would belong to him. The unfortunate souls who persevered in the panhandle of Oklahoma during the great depression soon learned the bitter lesson that the “untamed” prairie was merciless and fragile all at once. Conquering the land or cultivating it for agricultural purposes provided not a breadbasket but a dust bowl (Burns, 2012). A combination of aggressive and poor farming techniques, drought conditions in the region, and high winds produced massive dust storms that drove thousands from their homes and created a large migrant population of poor, rural Americans during the 1930s. “The government told us the rain follows the plow,” my father passionately professed, “but in reality, what followed was the greatest man-made ecological disaster in the

history of the United States.” As I write this, nearly a century later, his weary body is too feeble to visit the land he sweat, bled, and cried over.

In December of 2015, as I wandered the frozen prairie surrounding the old homestead in a chilling 18 mile an hour wind, I found myself contemplating the BLM’s offer and the potential worth of this unforgiving land. Undoubtedly, this was not the best timing for such an endeavor. Nevertheless, the daunting task of determining its proper fate had just recently come to rest firmly on my shoulders. With that responsibility came the task of assessing the value of the land and its prospective inhabitants. Most of my mental processing hinged on the following questions: What value might there be in *restoring* this landscape to a close approximation of the historic grassland conditions the Great Plains indigenous cultures inhabited over 10,000 years ago? And what species should the land be managed for to re-create some form of this ancestral landscape? Should I pursue the BLM’s offer to allow wild horses to *re-wild* this area as their future home on the range or would the move simply delay the process of finding a more sustainable solution for the perceived excess wild horses in the American West? Would the horses even be considered “wild” if they are gelded (as is typically BLM protocol) and the acreage they inhabit is fenced in? *Beyond* ecosystem sustainability, what solutions provide the best *welfare* for free-roaming horses?

Re-Wilding De-Domesticated Horses

Although the answer to my first question on restoring the Great Plains is philosophical in nature and rests on interpretations of “wild” and “native,” science and history have much to contribute to this issue. The empirical solution seemed relatively cut and dry: utilize the current ecological science supporting biodiverse ecosystems to enhance healthy numbers of *native* species. Aldo Leopold, the grandfather of conservation biology, also imparts the importance of history for understanding the land’s legacy:

That man is, in fact only a member of a biotic team is shown by an ecological interpretation of history. Many historical events, hitherto explained solely in terms of human enterprise, were actually biotic interaction between people and land. The characteristics of the land determined the facts quite as potently as the characteristics of the men who lived *on it*. (1966)

The upshot: the diversity of biotic interactions between people and the landscape leads to multiple interpretations of ecosystem function and suitable policy. North American land management policies base their standards for measuring “wildness” or the “naturalness” of landscapes on habitat conditions found during European settlement. Species “native” to the land were given precedence over those animals introduced by humans (later classified as “feral” or “invasive”). Thus, all imported animals that had gone wild were deemed undesirable and not granted sanctuary in the early national park system preservation efforts (Leopold et al., 1963; Ryden, 1990). In western Montana on August 24, 1805, while the American explorer Meriwether Lewis was mapping the newly acquired Louisiana Purchase and studying the area's plants, animals, and geography, he noted: “there are no horses in this quarter which can with propriety be termed wild” (Journal Entries from Journals of Lewis and Clark Expedition, 1805). Recent archeological excavations and DNA evidence have changed our understanding of the equids that roamed the North American continent long before the arrival of *Homo sapiens* (Kirkpatrick, 2010). Considering this new evidence, federal agencies should reexamine their arbitrary designation of the 16th century “wild” landscape standard.

My second question is rooted in philosophical, political, social, and emotional concerns: what types of solutions provide the best welfare for free-roaming horses and the other wildlife that share their habitat? This brings me to the heart of my project and requires deep insight into the relationship between humans, wild nature, and horses. It further necessitates an understanding of the various cultural narratives that lead to the desire for disparate wildlife management approaches and

the political discourse embedded in the ongoing wild horse management dilemma. People often think in narrative form and ascribe meanings via narrative (Sarbin, 1986; Mishler, 1995; White, 1980). Thus, it is not surprising that narrative also shapes collective human behavior and forms a base for political discourse (Lybecker, 2020). Understanding the narratives presented within a region helps reveal dominant perspectives and images that people ascribe to the region, including desired management tactics that reinforce those images (Lybecker, 2020). Would my narrative of a “wild” landscape support the notion of re-wilding northwest Oklahoma with what government agencies, ranchers, NGOs, and sportsmen classify as, “non-native,” “feral,” or even “exotic” animals (Shenhav, 2004; Goldman, 2019; Postiglione, 2018)?

My romantic attempts to gain insight from the spirits of the indigenous cultures, explorers, and pioneers who existed on this land before me, left me staring bleakly out into the gray horizon where thunderheads (a welcome sight in these lands) were rolling in across the open sky. I was surrounded by the sound of the howling wind, not the voices of *truth* and *wisdom* I desperately wanted. The smell of the sagebrush brought me home to the child that had ridden across these rolling hills on a little Welsh pony; a child that fantasized about the life of the pioneers who helped “tame” the landscape – for better or worse – and the indigenous cultures before them who hunted and cultivated this wild, desolate land. In my young mind, my trusty steed, (much like my naive visions of the Lone Ranger’s companion, “Silver”) was loyal to my every desire on that wide open prairie as she side-stepped gopher holes or catapulted forward to overtake my older sisters. As much as I was comforted by my yearning to preserve the wilderness and that mythical “Old West” I had envisioned while growing up through countless westerns, reruns of “Fury” and “My friend Flicka” or the treasured memoirs of Will James’ *Smoky the Cow horse* and

my father's Zane Grey novels I still lovingly adore, reality brought me back to my training in conservation biology, ecological history, and U.S. land and wildlife management policies. My ethical dilemma surrounding re-wilding of equids on the great plains of North America prompted me to dig further. The loss of what this land and its native and non-native cultures once were weighed heavy on my heart – as did the captive equids living out the remainder of their lives in BLM holding facilities.

The Old West narrative describing “winning the West” or “taming” the vast, open landscape, and its images of old-style frontier – including iconic western cowboys and hardy souls harvesting what the rugged landscapes could provide – has faded in the minds of many Americans (Manfredo, 2020). The New West narrative links elements of the Old West to the reality of the changes pushed forward by a growing, diverse population and shifts in society and technology. This new narrative pushes toward a more heterogeneous idea of the West by highlighting environmentalism and diversity and recognizing those indigenous cultures whose voices were literally erased by Euro-American narratives.

How has this shift in narrative and the changing cultural relationship to the horse affected the public's desired management goals? How has the historical interpretation of ecosystems contributed to the management of wildlife, and wild horses in particular? Do U.S. policies and management approaches reflect animal welfarist's and animal activists' belief on how best to manage wild horses, or do they favor environmentalist's or rancher's desires to reduce equid numbers? Are current policies supported by unbiased, trustworthy science? How has the linguistic confusion surrounding the terms “native,” “feral,” “wild,” and “invasive” hindered management efforts? What role on the landscape might equids fill as “ecosystem engineers?” How do we determine appropriate forage allocation for the horses and also provide for multiple uses on the landscape? And finally, how have the various “hands off” or

“heavy handed” management approaches led to *unintended consequences* for wild horse populations and their ecosystems?

I am about to inherit a tiny portion of what was once a part of the Great Plains of North America. How might I reconcile my personal narrative and conflicting views on sustainable native ecosystems with the welfare of wild horses? Would I have to abandon my allegiance to my wildlife biologist training to compassionately care for the wild horses roaming public lands in the American West? Is there an appropriate ecologic approach for wildlife management that includes a moral concern for an individual animal’s well-being?

In my personal journey to find solutions, an investigation surrounding the natural history, ecology, policy, and cultural values of the American mustang would be crucial. An understanding of how we got where we are and the future success in government agency’s efforts to manage wild horses would ultimately rely on knowledge gained from multiple disciplines. Such knowledge could assist policy makers and wildlife managers’ ability to understand the differences between wild horse management supported by emotion and management supported by ecological science. Furthermore, it could prove valuable in their efforts to find *common ground* and develop collaborative partnerships in this highly contested debate. These insights would also be critical in my own decisions surrounding my land.

And so here I begin. The land in Oklahoma awaits. Portions are set aside for cattle grazing, the Conservation Reserve Program, oil well developments, and wildlife habitat. The original intent of the Wild Free-Roaming Horses and Burros Act – designed over a half century ago to protect wild, free-roaming horses – has become muddled as American mustangs continue to stockpile in holding facilities. These animals exist increasingly as captive animals, not the iconic free and wild spirit proclaimed in the Act.

CHAPTER ONE

INTRODUCTION

If we cannot agree on the nature of nature and accept ourselves as responsible shapers of what we want nature to be, we are not likely ever to agree on how we ought to live with nature. (Dizard, 1999, p. 172)

Figure 1

The Author Observing Salt River Wild Horses (P. Murphree, 2018).



Where the Wild Things Roam

Earth's forecast is full of ominous environmental reports. Countless species of flora and fauna are jeopardized, and vital habitat is continuously being cut down, fenced in, or paved over as the human population soars above 7 billion. While menacing threats such as climate change hover, one study after another foretells the extinction of increased numbers of mammals, amphibians, and invertebrates (Kolbert, 2014). Conversely, in the face of all the doom and gloom, numerous species over the past century have been nursed back to health through conservation endeavors, from near extinction in some cases; others have persisted through the collaborative efforts of grassroots movements; still others, such as the coyote and wild horse in North America, have astonishingly persevered amidst historic eradication attempts by federal agencies and have adjusted unpredictably to life

among humans (Flores, 2016). Following generations of wildlife scarcity and debates over concern for animal welfare and animal rights, various sectors of the general public are skeptical of the notion that some wild creatures are currently not only plentiful, but *overabundant* enough to cause serious problems for people and ecosystems. For decades, wild populations needed to be watched over, nurtured, and protected. The suggestion that the numbers of many wildlife species now need to be *reduced* by federal agencies – conceivably by lethal means – is disturbing to society (Sterba, 2012; Dizard, 1999).

Why such disparity in moral concerns for wildlife between agencies responsible for their management and the American public?

Over the past century Americans have become increasingly less connected to nature (Manfredo, 2020). People in the U.S. are overwhelmingly urban dwellers; generations removed from their agricultural roots. The beliefs and attitudes the public draws upon to make sense of their lives in relation to nature have become quite diverse and complicated and are far from being settled. These unresolved differences allow considerable room for confusion, controversy, and bitter division as to how wildlife should be managed. Historically, the American public appears to alternate between the view that science and technology can dominate and control nature to a fear that human actions are destroying the earth (Sterba, 2012). Consequently, the role humans should play in managing people-wildlife conflicts has evolved into arguments that polarize society, divide communities, and set neighbor against neighbor. These nationwide disputes are as divisive as issues over guns, abortion, and government's role in society; at times, they are even more mean-spirited (Sterba, 2012; Dizard, 1999).

The confusion and conflict surrounding best management practices for these highly adaptable species thriving in public forests and private back yards, frolicking

on golf courses and gardens, intermingling with pets and children, interfering with recreational habits and livelihoods and increasing the risk of danger on highways and rivers alike, is not surprising. After all, the proclamation during the post-*Silent Spring* (Carson, 1962) era of the 1960s reaffirmed the notion that wildlife and wild places had been abused and harmed by humans and that if humans would just *stay out of the way of nature*, wildlife would be better off (Sterba, 2012; Dizard, 1999; Bhattacharyya, 2011). At the same time, the public's current concerns for wildlife have become increasingly centered on individual animal welfare, including the freedom and right for wild creatures to live apart from human intrusions. To the general public, in fact, the defining concept of "wild" is the freedom from human interference (see Appendix A) (Geist et al., 2001).

Dominion over Nature

A brief look back at environmental history in the U.S. reveals that concerns involving wildlife management and resource exploitation emerged in the early 20th century while the governmental organizations mandated to oversee the preservation/conservation efforts of the public's natural resources emerged shortly thereafter (Pisani, 1985). Endorsed, at the time, by societal values that supported a Utilitarian mindset, agencies regarded America's natural resources as a commodity that could stimulate the country's rapid growth and development. Future wildlife agency professionals were trained within university systems and were members of professional societies that maintained this philosophy of multiple use of the land for the greater good (R.B Gill, 1996). Resources for state wildlife agencies were funded through the sale of recreational hunting and fishing licenses while the guiding principles of the North American model of wildlife conservation were set firmly in place. These series of events set the stage for a top-down expert driven, client-based approach to wildlife management (Jacobson & Decker, 2008) and further solidified

the current policy-making relationships between Congress, agencies, and interest groups (Adams, 1981).

Concerns for biodiversity and endangered species moved to the forefront in the 1960s and 1970s in line with the environmental movement of the time. The awareness that agency activities prioritized certain species and altered the natural environment at the turn of the 20th century (e.g., ungulate populations enhanced at the expense of predators to ensure abundant prey for hunters) prompted a concern for the role of top predators (such as wolves) in ecosystem management efforts (Berger et al., 2001; Ripple et al., 2014). While consumable use of wildlife (hunting, fishing, and trapping) are to this day considered fundamental uses of wildlife to be managed in trust for the public (Leopold, 1966; Organ et al., 2010), the percentage of the U.S. population that hunts and fishes has declined steadily (in 1975 10% and 27% and in 2015 4% and 14%, respectively) (Leopold et al., 1963; Ryden, 1990; Watkins, 2019). These declines have raised concerns about the ability to support future conservation efforts through state agency funding. Difficulties have also arisen from increased social conflict over wildlife policy issues, especially around management of predators, species that were historically considered pests by agencies, or those that behave in an invasive manner. Such tensions suggest the public is increasingly at odds with traditional management approaches (Manfredo, Bruskotter, et al., 2017; Manfredo, Teel, et al., 2017; Slagle et al., 2017).

Rewilding Our Minds

According to social scientist Michael Manfredo, one of the founders of the field of human dimensions of wildlife management, the growing social conflict and declines in hunting in the U.S. can be attributed to a fundamental cultural shift reflected in changing societal values. Theories of modernization and cultural change suggest that economic growth and increased prosperity after World War II led to

other changes, such as improved education and heightened urbanization, consequently altering the context of American life (Ciment, 2015). The belief among cross-cultural-values researchers is that such modernization generated a global shift in human needs and a subsequent change in values that increasingly emphasize self-expression, social affiliation, and egalitarianism over subsistence needs (Schwartz, 2006; Inglehart, 2018). The cultural shift also instigated greater concern for the environment, increased interest in public participation in political processes, and new perspectives, including a greater emphasis on harmony over mastery in human-environment relationships (Schwartz, 2006; Gelissen, 2007; Inglehart, 2018).

Building on theories of modernization, Manfredo, Berl, et al. (2021) argue these same modernization forces had a profound effect on human cognitive processes about wildlife. Although modernization elevated the need for social affiliation, increased urbanization led to social isolation (Hortulanus et al., 2006). Social priorities consequently shifted to emphasize the need for companionship and a sense of community (Bess et al., 2002), resulting in a social connectedness with wildlife as companions or fellow life forms. Because modernization diminished people's dependence on wildlife for survival, their daily interactions and experiences with wildlife were greatly reduced. Such removal from contact led to a decrease in wildlife related risks and fear of encounters (Bruskotter et al., 2017). Knowledge gained through direct experience was replaced by learning about wildlife indirectly through media and other outlets, where wildlife are often highly anthropomorphized. Wildlife began to be increasingly seen as more humanlike; coexisting with humans in a collective social context (Franklin, 1999; Manfredo, Urquiza-Hass, et al., 2019). As humans categorized animals more frequently as conspecifics, ideals and ethics about wildlife changed. The outcome of these changes has been portrayed by Manfredo and

colleagues as a shift from the wildlife values of domination to mutualism (Manfredo, Teel, et al., 2009; Teel & Manfredo, 2010).

The ethos of domination has persisted over centuries as a significant cultural ideal that extensively shaped Euro-Americans' interactions with the natural environment (Kluckhohn, 1951; Schwartz, 2006). Evidenced in current U.S. policy and the early establishment of institutions designed to oversee wildlife, domination values support a view that non-human creatures should be used to benefit humans. This philosophy of domination is believed to have originated during the Protestant Reformation in Europe (Pattberg, 2007). According to Manfredo, domination wildlife values are stronger among U.S. residents with ancestry from European countries where the Reformation began (Manfredo, Teel, et al., 2016). A core element in the process of domination is the elevation of *differences* between humans and wildlife, as exemplified in the Cartesian view of animals (i.e., animals are incapable of feeling pain and are undeserving of compassion) (Cottingham, 1978). Psychologically and ethically, such hierarchy of living organisms enables the allocation of wildlife to roles and treatment that are considered unfit for humans as well as the belief that it is culturally acceptable to use wildlife to promote our desires. In contrast, as social-ecological history has revealed, mutualism values (having emerged through modernization and the accompanying trend toward anthropomorphic thinking), reflect a view that wildlife are part of one's social network, possessing many of the same characteristics as humans, and deserving of rights and compassion like humans.

With increased concerns for animal rights and animal welfare, Americans are increasingly rejecting land management policies that appear to be stuck in the philosophy of domination. Shifting values toward wildlife, and wilderness in general, have led to the rising awareness of a conservation ethic with a focus on biodiversity,

and a symbiotic relationship where all species are considered part of a larger community. In the mid-20th century, the renowned proto-conservation biologist and environmental philosopher Aldo Leopold ignited such thinking in *A Sand County Almanac* (1949) as he re-examined man's role in nature: "we abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect (Leopold, 1949). Robin Wall Kimmerer, plant ecologist, nature writer and member of the Citizen Potawatomi Nation, takes the concept of Leopold's ecological community a step further by imparting the value of reciprocity and the knowledge of indigenous cultures in our duty to provide for the proper care and concern for all species as individuals:

Each person, human or no, is bound to every other in a reciprocal relationship. Just as all beings have a duty to me, I have a duty to them. If an animal gives its life to feed me, I am in turn bound to support its life. If I receive a stream's gift of pure water, then I am responsible for returning a gift in kind. An integral part of a human's education is to know those duties and how to perform them. (Kimmerer, 2013)

Our relationship to nature as well as the turmoil and disputes over human-wildlife conflict and the degree of human manipulation is further amplified when the species in question is believed to be "unnatural" in its environment (Sterba, 2012). Many of these so called "unnatural" wildlife species have a domestic counterpart and are classified as "feral." Others have been introduced to their new environment by humans, and have been categorized as "non-native" or "invasive" (see Appendix A). Categorizing animals based solely on their relationship to people alienates humans from their role in the ecosystem as functioning members of the "natural" community (as well as their role in management) and biases science's efforts to address animal welfare concerns (Bhattacharyya et al., 2011). While federal management of wilderness areas (and to some degree national parks) originally adhered to a preservationist or a hands-off approach to all things "wild," national forests and

public rangelands came into being with an opposing philosophy that incorporated active management and restoration of nature to a desired ecosystem state that would allow for multiple uses (Coggins et al.,). Providing for the needs of the individual lives of the wild creatures (as desired by animal welfarists and animal activists) becomes increasingly difficult with a philosophy that supports the notion that humans should *step out of the picture* and “let nature be.” On the other hand, manipulating the lives of wildlife through a domination ethic and a “heavy handed approach” is also not acceptable to those who view animals from a mutualistic perspective.

Deconstructing Nature

While human constructed terms for wildlife illustrate our relationship to animals and our moral concern for their welfare, the human construction of nature reveals our desired trajectory for the areas these creatures inhabit. These differences are molded by unique perceptions and understandings of ecosystem processes. In groundbreaking papers, conservation biologist Reed Noss (1990) and environmental philosopher J. Baird Callicott et al. (1999) argued that understandings or normative concepts within conservation biology today can be grouped into two philosophies/approaches that they term “functionalism” and “compositionism” (Noss, 1990; Callicott et al., 1999). According to these classifications, functionalists can be distinguished by the tendency to focus on ecological processes such as nutrient cycling and thermodynamics. Compositionists, by contrast, derive their world view from ecological biogeography and community ecology, viewing ecosystems as interacting hierarchies of individuals, populations and communities. The importance of the functionalist/compositionist dichotomy to conservation practice is revealed in the consequences of their approach; in other words, these differing perspectives strongly influence the desired end point of a conservation

intervention (Gillson et al., 2011). Seen through the eyes of a functionalist, the goal of conservation is to restore and maintain ecosystem processes (akin to rewilding efforts, more on this in Chapter Five). Conversely, a compositionalist approach emphasizes restoring or maintaining species assemblages that closely resemble past communities, usually those that existed in pre-industrial or pre-historic times. Trained under the ecological science that supports and defends the North American model of wildlife management and backed by federal and state land management policies, public land managers control species at the population level within a delicate ecosystem balance in which humans, in many cases, must play the role of predator (culling wildlife populations) in order to bring about appropriate numbers of desired species under control; an approach not supported by those advocating for animal rights (Geist et al., 2001). Concern for individual animal welfare under *either* a functionalist or compositionalist approach has thus historically been considered a detriment to the well-being of the ecosystem.

Although the concepts of nature, wilderness, and wildlife are linked for many people, there are individual, cultural and regional differences in the ways in which those ideas are associated as well as differences in the distinct meanings that the word "wild" holds and how this might relate to the welfare of wildlife (Bhattacharyya, 2012). Social and economic trends (as we have seen with the modernization theories) also play a vital role in influencing how people conceive of and value nature, wilderness, and wildlife. Often, these diverse views about how best to proceed in management efforts for wild creatures do not align with scientific approaches that ignore the concern the public has for the psychological welfare and emotional lives of animals. This disconnect between the interpretation of "wild" and "wilderness," the public's accepted degree of human interaction with wildlife, and the ensuing stalemate in policy implementation, has led to unintended consequences for

wildlife, including scenarios that result in massive loss of life due to starvation and dehydration; tragedies that are unacceptable to well-intended animal welfare and animal rights advocates (see Chapter Four).

Policy makers and North American wildlife agencies are increasingly faced with the challenge of effectively representing a diverse public who tell vastly different stories and hold contrasting beliefs surrounding the role humans should play in managing people/wildlife conflicts (Cronon, 1992). These opinions have evolved into arguments that polarize society and divide communities. As mentioned earlier, environmental historian William Cronon (1992) reminds us that narratives remain essential to our understanding of history and the human place in nature. When historians describe human activities within an ecosystem, they categorically tell stories about them.

We configure the events of the past into causal sequences-stories-that order and simplify those events to give them new meanings...When we choose a plot to order our environmental histories, we give them a unity that neither nature nor the past possesses so clearly. In so doing, we move well beyond nature into the intensely human realm of value. There, we cannot avoid encountering the postmodernist assault on narrative, which calls into question not just the stories we tell, but the deeper purpose that motivated us in the first place: trying to make sense of nature's place in the human past. (Cronon, 1992, p. 1349)

With the escalation of social conflict over wildlife management issues and rising threats to wildlife and their habitat, the success of an appropriate management strategy hinges on the managing agencies' preparedness and capability to adapt to changing conditions (both social and ecological) in order to meet the urgent needs of wildlife and habitat (Manfredo, Teel, et al., 2009). The ability to monitor, adapt and respond *quickly* is crucial in many cases. Unfortunately, immediate efforts are hindered by many of the policies currently regulating wildlife. The restrictions embedded within the National Environmental Protection Act, for example, require months if not years for agencies to gather meaningful data on habitat assessment in

their effort to support or condone a specific management approach (Coggins et al., 2007). If the public cannot agree on how best to manage wildlife in a *timely* manner, critical management decisions are impeded, and wildlife and their habitat suffer. It is therefore crucial that emergency measures and flexibility be incorporated into land management policies and procedures.

In addition to policy restrictions, certain segments of the public and the wider conservation community condemn some of the tools available in the land manager's toolbox, including methods of control for overabundant species that incorporate such practices as wildlife eradication or euthanasia (National Research Council Committee to Review the Bureau of Land Management Wild Horse and Burro Management Program [NRC], 2013). This "do no harm" approach is represented by a growing movement known as "Compassionate Conservation" and is supported by an increasing number of conservation scientists, cognitive ethologists and behavioral ecologists (Bekoff, 2019). Compassionate conservation embraces an ideology where all individual animals matter, wildlife has intrinsic value, and peaceful coexistence is promoted (more on this in Chapter Three). Launched in 2010 at an international symposium hosted by the Born Free Foundation in Oxford, UK, this new paradigm, which remains controversial among many traditional conservationists, represents a rapidly growing international and cross-disciplinary movement that combines the fields of conservation biology and animal welfare (Gray & Sartore, 2017). This evolving field stipulates the need for a conservation ethic that integrates the protection of other animals as individuals, not just as members of populations or species ("collectives") but valued in their own right.

A Horse of a Different Color

No creature better exemplifies this line of thinking, this emotional confusion over connection to an animal and its classification as a pest to be eradicated, a

resource to be extracted or a cultural icon to be revered and protected, than the wild horse of North America: the infamous Mustang. Exceptionally poised to lend insight into human-environment relationships, horses fulfill a multiple purpose role by providing both domestic affection and companionship and capturing the essence of untamed wildness that is inspirational to many people (Ransom & Kaczensky, 2016). Through analysis of the horse's role and function in historical, ecological, and social contexts, an understanding of the meaning humans give them as well as an interpretation of the ecological and behavioral science used to manage them can be gained. This knowledge should enhance public land managers' ability to collaborate with and find common ground for various sectors of the public in their efforts to develop a public approved, sustainable wild horse management plan. Knowledge of the contrasting perceptions of the horse's significance on the North American landscapes and the diverse ways of valuing the horse offer a unique view into the human relationship to nature and our ethical duty to manage it gracefully. It also provides insight into the justification and potential biases surrounding the policy and science used to manage wildlife and provide for their welfare (Bhattacharyya et al., 2011).

Bio-Social Encounters: Transformations of the American Mustang

The wild horse management dispute, currently ongoing on western rangelands in North America, represents far more than a clash of opinions over the welfare of wildlife and concerns for a suitable healthy environment for the horses to call home. Powerfully embedded throughout the discourse between livestock operators, horse advocates, environmentalists, and agencies who continue to debate animal welfare issues and the degradation of the environment where many of these free-roaming horses reside, lie deeply rooted feelings of oppression, dominance, entitlement, suspicion, misconceptions, anger, and biases, aimed, not only towards

members of other stakeholder groups (see for example, Dizard, 1999; American Wild Horse Campaign, 2020e; Return to Freedom, 2022) evolved in the dispute, but towards the interpretation of the ecological science and policies used to manage horses, and towards the horse *itself*. Policy makers and wildlife managers must be mindful of these social trepidations, attitudes, and perceptions in their efforts to develop a sustainable, yet ethical management plan.¹

According to social ecological researchers Steven E. Daniels and Gregg B. Walker, in *Working through environmental conflict: the collaborative learning approach* (2001), conflict in natural resource policy decisions consist of incompatibilities surrounding the capacity to resolve issues due to unique stakeholders involved, various understandings of scientific processes, and desired outcomes (Daniels & Walker, 2001).

Sociologist Paul Wehr (1979) originally identified seven domains describing conflict “incompatibilities.” All are evident in the wild horse management debate and can be described as:

1. Fact-based domains: when groups do not agree on the “facts” or “truth” surrounding the issue (the interpretation of the science of rangeland management – are horses or cattle degrading the environment?).
2. Value-based: when groups do not agree on what should determine how a decision is made (welfare or rights for horses, concerns for habitat or maintaining a way of life).
3. Interest-based: when groups cannot agree on who gets what resources (more habitat for mustangs, protected areas for endangered species or increased grazing opportunities for cattle operations?).

¹ See Appendix A for Identification and definitions of stakeholders, value, attitudes, culture and various terms used to describe wild horses: feral, wild, domestic, invasive, native, tame-.

4. Jurisdiction-based: when groups disagree on who should be making the decisions (top-down approach where government agencies and academics decide what is “best” for rangeland management and mustangs, or bottom up approach where stakeholders involved in the issue provide solutions?).
5. Person-based: when there are interpersonal compatibility issues (distrust of the BLM or U.S. Forest Service (USFS) on the part of horse advocates, frustration with government agencies by ranchers due to perceived mismanagement of resources, animosity between ranchers and animal rights groups due to value differences).
6. History-based: when groups have diverse narratives describing their interpretation of the issue (‘Old West’/Dominism approach where ranchers assumed control when mustangs roamed over shared grazing areas verses ‘New West’ approach that focuses on various interpretations of environmental or animal welfare concerns through either Dominism or mutualistic approach).
7. Culture-based, when there are disagreements caused by different components of culture (Identifying with rural or urban settings). For multifaceted controversies, such as wild horse management in the United States, it is essential to take into consideration the fact that resolutions are not always feasible. Instead, we must look for ways to manage the *conflict* in order to make progress instead.

As Daniels and Walker (2001) point out, environmental and natural resource policy decision making is evolving. More and more, the general public and management agency personnel are seeking ways to "do things differently;" to significantly participate in the decision-making process as parties work through policy conflicts. "Doing things differently" has come to mean doing things collaboratively.

Daniels and Walker address collaboration by featuring a method, "collaborative learning," that has been designed to address decision making and conflict management needs in complex and controversial policy settings. Collaborative learning, as they describe it, is a hybrid of systems thinking and alternative dispute resolution concepts and is grounded explicitly in experiential, team – or organizational – and adult learning theories.

Wild horse management conflict nationwide is multidimensional because of the complexities of the disparate ecosystems where wild horses roam and the variations in proximities to urban areas throughout the U.S (Bureau of Land Management [BLM], n.d.c). Each state and wild horse territory or Herd Management Area throughout the country is unique in its composition of stakeholders. What might be achievable (and acceptable) in the management of wild horses roaming the banks of the Salt River – just minutes away from downtown Scottsdale – might be quite different from the tolerability and human involvement in wild horses roaming the rural, ranching communities in the White Mountains of Arizona. Before addressing animal welfare issues or the concerns entangled within the assessment of wild horse habitat, it will be crucial to first investigate the actors engaged in past and present mustang management efforts. Insight into their cultural history as well as their perception of nature and value of wild horses will assist in the understanding of current social and ecological concerns. Such insight will provide clues surrounding the legends, misconceptions and interpretations of the numerous terms used to describe and manage wild horses. The knowledge gained will provide an in depth understanding of stakeholder attitudes towards current management efforts (Bhattacharyya & Larson, 2014). Perhaps, most importantly, an examination of various perceptions of nature and value of wild horses will reveal those voices whose interpretations have been silenced for decades.

How can the various human constructed terms, used by stakeholders to describe wild horses, shed light on their moral concern to provide for the horses' needs? Should such concerns change if the animal in question is domestic, wild, tame, feral, native or invasive? How can these various terms interfere with the collection of data that might prove essential in efforts to interpret mustang physiological, psychological and ecological needs?

The Servant Horse: Utilitarian Value

Insights into the Euro-American interpretation of the line separating wild and domestic creatures is provided by British author Rudyard Kipling (1902). Although his allegory in "The Cat Who walked by Himself" was designed to explain the process of domestication of wild beasts to young British children during the Victorian era, glimpses of gender roles and the relationship to nature and expectations for women and men were correspondingly emphasized.

When the Man and the Dog came back from hunting, the Man said, "What is Wild Horse doing here?" and the Woman said, "His name is not 'Wild Horse' any more, but the 'First Servant', because he will carry us from place to place for always and always and always. Ride on his back when you go hunting. (Lewis, 2006)

Women exemplified domesticity and were responsible for the further separation of man from his wild nature. The woman's "magic" lured the wild animals into her home where they succumbed to her wishes. In this instance, it could be further interpreted that the woman possessed some special skill for communication with other species that the man did not. She alone was responsible for domesticating wild animals and for taming the wildness in man as well (Chambers et al., 2020). Regardless of the role of gender in this interpretation it should be noted that once wild animals became domesticated, they were evaluated in a different manner (Armstrong & Botzler, 2017). There were certain expectations required of the captive animal as well as the caretaker. Consequently, domestic animals were treated

differently. Humans set up boundaries and devised rules that would incorporate care and concern, currently reserved and integrated into the realm of animal husbandry. It was clear: humans felt a greater obligation to care for animals once they had domesticated them (more revealed in Chapter Three).

The Feral Horse: A Wild Rose by Any Other Name

Remarkably suited to symbolize the conquest of the wild and the extension of culture into nature, the wild horse has defied incredible odds to persevere on western rangelands of North America. As a key player in human history, horses have superbly adapted to a wide range of ecological habitats worldwide and have been reintroduced to 18 countries, including all continents except Antarctica (Ransom & Kaczensky, 2016). Their varied ecological impacts on ecosystem structure, composition, and function at short and longer-term timescales, as well as their socio-cultural significance are reflected in diverse global management approaches. They are considered by some as “exotic pests” (“Brumbies”) in Australia, protected but rigorously controlled in New Zealand, championed as heroes in their struggle to survive in Namibia, and classified as “eco-system engineers” and operated as tools for restoration or re-wilding in Siberia, Germany, Austria, the Netherlands, and Great Britain (Ransom & Kaczensky, 2016). In the U.S , they are protected as a “National Heritage Species” and managed by various agencies: the BLM (within designated Herd Management Areas”, short term holding facilities, long term holding facilities and off-range pasture), the USFS (within “Wild Horse Territories”) and the National Park Service (within the Assateague Island National Seashore or Pryor Mountain Wild Horse range). Aside from these areas, most U.S. public land management policies strictly call for removal of free-roaming horses by classifying them as “feral” (escaped domestic animal), “non-native” (transplants from another

area) or “invader” (unwanted) in the ecosystem (Reed, 2008; Wild Horse Education, n.d.).

The Healing Horse: Spirit of the Wild

Extremely social creatures, the horse, *Equus caballus*, has capitalized on the ability to engage in a symbiotic relationship with humans (Davis & Maurstad, 2016) or adapt both socially and behaviorally to avoid human influence and find fodder on their own (Beever & Aldridge, 2011). Their highly developed social skills increased probability of survival against prehistoric predators (Forrest, 2016); these same social skills, however, also allowed the horse to succumb to the social cues of humans (Forrest, 2016). This unique creature is vowed by U.S. federal law to embody the “pioneer spirit of America;” a view that stems from a belief by many that wild horses are disparate mavericks with an ability to survive, and in fact flourish, in the harshest of environments. The distinct language of the Wild and Free-roaming Horses and Burros Act of 1971 – which protected their dwindling numbers 50 years ago and still protects them today – validates the cultural value of the wild horse to Americans. Congress found and declared that “wild free-roaming horses... contribute to the diversity of life forms within the Nation and enrich the lives of the American people.” Furthermore, “they shall be protected from capture, branding, harassment, or death; and to accomplish this, they are to be considered in the area where presently found, as an integral part of the natural system of the public lands” (Wild Free-Roaming Horses and Burros Act [WFRHBA], 1971).

Even if they’ve never seen a wild horse in person, most Americans who grew up in the United States could probably conjure up some sort of image that describes what their presence on the landscape means: Hooves pounding over untamed prairie, flying, unruly manes, sleek bodies reflecting the glimmering light of the Southwest’s painted sunset, silhouettes of rearing stallions, playful leaps and

whinnies of foals, reassuring nickers of mares. This image of the wild horse exemplifies speed, strength, freedom and harmony; it's a perception that, in the minds of many Americans, could only exist in the wildness found in desolate places where big empty skies characterize the day and coyotes songs define the night, wild places endlessly outside the grasp of civilization (Philipps, 2017). As urban areas continue to grow, many Americans cling to a cultural captivation with these mythical "Old West" images –or perhaps more so to the "wildness" it represents. While the ecological term "re-wilding" originally emerged as the idea of letting nature take care of itself and enabling natural processes to shape ecosystems, over the past few decades it has evolved into numerous approaches that require various degrees of human intervention (more on this in Chapter Five). The term has also entered the public consciousness and has been picked up by those seeking a greater sense of connectedness to wild nature, mindfulness and autonomy – and a little less conformity. Phrases such as "rewilding the self" and "rewilding the mind" express aspirations for new forms of urban living where nature is built into cities (Jepson & Blyth, 2020). On some intellectual level, many in the public would agree it is important just to know that wide-open, "wild" spaces remain –not only to renew our souls, but for wild horses to roam.

There is a reason for this draw to wild nature. In *Biophilia* (1984) the influential biologist and naturalist Edward O. Wilson argues that our natural affinity for life is the very essence of our humanity and binds us to all other living species (Wilson, 1984). A growing body of empirical evidence further confirms what many of us intuitively know – that contact with nature improves our mood, reduces anxiety and stress, and boosts our immune system (Jepson & Blyth, 2020). The horse has been shown to have healing power as well. Accounts of horses' curative, physical emotional and psychosocial qualities emerged in 5 BC and then again in World War I

veterans early in the 20th century (Bustad & Hines, 1984). In 2000, Allan Hamilton, a professor of neurosurgery at the University of Arizona School of Medicine, used horses to teach communication skills to healthcare clinicians (Walsh & Blakeney, 2013). Professor of medicine Beverly Kane (2007), followed this with a course titled *Medicine and Horsemanship: Transforming the Doctor–Patient Relationship with Equine-Assisted Learning* at the Stanford University School of Medicine. In *The Manual of Medicine and Horsemanship* Kane describes increased awareness of the incongruence of intention versus behavior, confronting fear, mindfulness, focus and assertiveness. Today, Equine Assisted Therapy (EAT) as an intervention is increasing in popularity with significant positive results (White-Lewis et al., 2017).

The Companion Horse: Faithful Allies

Further confirmation for public support in the U.S. for free-roaming horses, can be found in deep-seated values and cultural norms about animals. Among 33 animal species ranked by thousands of U.S. citizens interviewed, the horse received the second-most positive ranking, trailing only the domestic dog (Kellert & Berry, 1980; Bedford, 2021). The horse, however, is far more than a companion animal. Unlike any other animal in human history, their very nature, history, morphology, and role in human lives sets them apart from other types of animals in fundamental ways. Through the process of domestication over 6,000 years ago, the horse has been asked to do more than any other livestock or pet, and in ever more complex forms. Over the ages, the horse would even learn to dance, morphing into a partner that offered new dimensions of meaning to concepts such as “co-being”, form of “we” or “contact zones” (Dalke, 2010; Dalke, 2011; Davis & Maurstad, 2016; Kelekna, 2009). The human riding with horse has been symbolized as a type of centaur and a form of connected being. Together, rider and horse would blur the division between animals and humans and bridge the divide between nature and

culture (Davis & Maurstad, 2016). In addition to their use in riding and hauling as form of transport, the speed, agility, longevity and stamina of horses as well as their capacity to survive in a variety of terrains and climates has had profound effects on human history worldwide (Ransom & Kaczensky, 2016).

Although many U.S. born Euro-Americans identify with this symbol of the independent, rugged, free spirit on whose back the American West was “tamed,” many Native Americans identify with the symbol of an ally, inspiring and useful in times of peace, and fearless in times of war. The story of the relationship of Native peoples and the “Horse Nation,” as many tribes describe them, is one of the remarkable sagas of human contact with the non-human world. Traditionally, Native peoples have regarded all animals as fellow creatures with which a common destiny is shared. As an integral part of tribal cultures, the horse not only reinvented modes of warfare but also hunting, means of travel, and standards of wealth and prestige. The Apache, among one of the first tribes to obtain horses in North America, were transformed from a group of humble nomads into a feared fighting force. One buffalo hunter recalled in his memoir that by the 1850s the Comanche were boasting in all seriousness that the horse was created by the Good Spirit for the particular benefit of the Comanches, and that the Comanches had introduced it to the Whites. It is further argued by some in the indigenous community that horses did not go extinct in North America and that the false narrative of their introduction to Native Americans by the Spanish was a way to promote power and status over the “inferior” culture they conquered (see Chapter Two) (Collin, 2017).

Native peoples paid homage to horses by incorporating them into their cultural and spiritual lives, and by creating art that honored their valor and elegance. The glorious days of the horse culture were magnificent but brief, lasting just over a century. The bond between American Indians and the Horse Nation, together with

the images they conjure up, however, have remained irrepressible throughout generations (Lawrence, 1982; Collin, 2017; Haines, 1938).

While the importance of the cultural value and historical tie to horses is indisputable throughout history, symbolic images and perceptions surrounding wild horses – romanticized by Hollywood and perpetuated today throughout social media – have also had a huge impact in shaping of the mustang’s special status in North America (Dalke, 2010; Dalke, 2011). An understanding of these deeply held beliefs is crucial in untangling the complexities of the conundrum surrounding the current role of wild horses on the North American landscape (visited further in Chapter Two).

The Broad Outline of the Wild Horse Management Debate

A Home on the Range

The existence of the populations of wild mustangs in the American West, which are often alleged to be increasing, regularly ranks among the most challenging of all the U.S. government’s conservation and public land problems. Although horses (*Equus ferus caballus*) evolved on the North American continent, it is generally accepted that they were extirpated roughly 8,000-10,000 years ago and began re-inhabiting the area 500 years ago through re-introduction by early Spanish explorers (see Chapter Two for indigenous voice’s narratives surrounding evidence the horse did not go extinct in North America). These free-roaming horse populations, derived from Spanish bloodlines, were supplemented with intentional and unintentional releases of domesticated draft and saddle horses by the military and settlers through the mid-twentieth century. Their distribution throughout the American west was enhanced through Euro-American horse trading and Native American cultures (Dobie, 1934; Flores, 2016).

Before 1959, free-roaming horses were largely unregulated. They were released, grazed, captured, killed, sold, and otherwise used by ranchers and other

inhabitants of the region, as they desired (Dobie, 1934). In the 1950s, Nevada Velma Bronn Johnson ("Wild Horse Annie") and other concerned citizens began raising public awareness regarding the perceived inhumane capture and treatment of free-ranging herds as well as the mustangs dwindling numbers on public rangelands. In response to this organized and effective public relations campaign, Nevada Congressman Walter Baring successfully introduced the Hunting Wild Horses and Burros on Public Lands Act in 1959 (Wild Horse Annie Act, 1959). Although the Act prohibited the use of motorized vehicles to hunt wild horses on all public lands, their protection was not guaranteed until Congress passed the Wild Free-Roaming Horses and Burros Act (WFRHBA) in 1971. With the passage of WFRHBA, Congress declared that:

Wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands. (WFRHBA, 1971)

WFRHBA consequently mandated the management, protection, and study of "unbranded and unclaimed horses and burros on public lands in the United States" to the BLM under the Secretary of Interior, and the USFS under the Secretary of Agriculture, to "maintain a thriving natural ecological balance on the public lands." The wild horses located in 1971 were consequently established within BLM Herd Management Areas encompassing 26.9 million acres today and USFS Wild Horse Territories covering 19,7000 acres (see the map in Appendix C and D). Public lands, under BLM and USFS jurisdiction, are managed for multiple uses, including recreation, mining, forestry, livestock grazing, hunting, and other wildlife-related activities (NRC, 2013). Herd Management areas and Wild Horse Territories, however, were designated mainly for wild horses (and burros) and were to be "devoted principally *but not exclusively* to their welfare in keeping with the multiple-use concept for management of public lands" (a point of contention for many wild horse

activists) (NRC, 2013). For each Herd Management Area (HMA) and Wild Horse Territory, the BLM and USFS set an Appropriate Management Level, which is the perceived number of wild horses that can properly thrive in an area without threatening other land uses. Because all other land uses must be considered, this number tends to be lower than the land's carrying capacity (NRC, 2013).

Since the passage of WFRHBA, the management of America's mustangs has been embedded in controversy. The dispute primarily focuses on the inability to maintain the multiple use concept on western rangelands and the public's increasing concerns for the wild horses' welfare and rights. Land management issues largely revolve around the inability of ecosystems to sustainably support mustangs, wildlife and domestic cattle inhabiting many of the HMAs or Wild Horse and Burro Territories (BLM, personal interview, 2017). In many cases, these unsuitable ecosystems are either too small to contain a viable number of horses to provide for genetic diversity, contain an insufficient number of large natural predators, are deficient in rainfall, and/or lack adequate forage production to control or sustain growing equine populations, particularly in areas where domestic cattle are also grazed (which includes the majority of HMAs and Wild Horse Territories). Although it is debated by wild horse advocates, researchers' estimates reveal that mustang populations, without management, will continue to double every five years (NRC, 2013). This exponential growth, in the minds of cattle ranchers or environmentalists, is detrimental to the landscape and is perceived as the result of BLM or USFS mismanagement of rangelands. In contrast is the position professed by many BLM and USFS employees; namely, it is not mismanagement per se, but public protest over animal rights or welfare issues that deprives them of the ability to utilize the management tools they currently have available to regulate population growth (BLM, personal interview, 2017).

Tools in the Agency Toolbox: Healthy Horses on Healthy Range

In an effort to maintain a “thriving ecological balance,” WFRHBA has been amended several times, leading to a series of management interventions that have proved both costly and controversial (Norris, 2018). The Federal Land Policy and Management Act (Federal Land Policy Management Act [FLPMA], 1976) authorized the use of helicopters by the BLM to herd and capture mustangs and motorized vehicles to transport them to off range corrals. The Public Rangelands Improvement Act (PRIA) of 1978 (Public Rangelands Improvement Act [PRIA], 1978) provided authority to the Secretary of the Interior for the use of fertility control, removal, and adoption of “excess” animals, and the humane destruction of old, sick, lame, and even healthy animals if deemed necessary to maintain rangeland health. PRIA further called for the inventory and management of wild horse and burro populations at Appropriate Management Levels (AMLs) on HMAs and Wild Horse and Burro Territories. By definition, the AML is the number of wild horses (and burros) that the agencies believe can prosper in an area without degrading the habitat or threatening other land uses. “Excess” wild horses and burros are defined as animals which must be removed from Herd Management Areas in order to preserve and to maintain the thriving natural ecological balance and multiple-use relationship in that area. If the number of horses and burros exceeds AMLs, the legislation allows the BLM to remove these “excess” animals (NRC, 2013). Currently, the total high AML for the United States is 26,770 animals. As of 2022, federal agencies estimate roughly 95,000 mustangs are currently roaming over the arid rangelands of ten western states including Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah and Wyoming. These numbers represent population surveys within HMAs and Wild horse and Burro territories only. They do *not* reflect the numbers of

free-roaming horses found roaming on tribal lands within reservations or other public lands in North America.

While in principle the concept of AML appears to be a technical measurement, one necessary for the maintenance and promotion of healthy herds and ecosystems, it's determination has been highly contested by animal rights and animal welfare organizations (American Wild Horse Campaign, 2020f; Return to Freedom, 2022). In 2013, the National Research Council (NRC) concluded that the BLM's methods for establishing Appropriate Management Levels, as well as how these numbers were being monitored, and adjusted, were not transparent to stakeholders. They also concluded that these current methods of establishment were not supported by scientific information, nor amenable to adaptation with new information and environmental and social change.

Appropriate Management Levels are a focal point of controversy between BLM and the public. Standards for transparency, quality, and equity are needed in establishing these levels, monitoring them, and adjusting them. Data and methods used to inform decisions should be scientifically defensible, and the public should be able to understand the methods used and how they are implemented and to access the data used to make decisions. Appropriate Management Levels should be adaptable based on environmental change, changes in social values, or the discovery of new information. (NRC, 2013)

Many animal welfare/activist groups, such as the American Wild Horse Campaign, cite NRC's findings in their opposition to potential gathers. When mustangs are judged to be in excess numbers (above AML), they are gathered, either on foot, on horseback, by vehicle, with the use of a helicopter, or using the "bait and trap" method (involving the use of either food or water to lure mustangs into the corral) (NRC, 2013). Once corralled, the horses are aged, scored for fitness, provided with antibiotics, and, under certain circumstances, darted with a fertility agent – either Porcine Zona Pallucida or GonaCon. While some of the mustangs are returned to the range, horses that are permanently removed are gelded and trucked off to federally funded permanent holding facilities or to the Midwest where the BLM

rents space from landowners in order to store them in off-range pastures. Here, they will live out their natural lives (perhaps 35 years) until they can be adopted through auctions, or an improved resolution is implemented. While WFRHBA states that animals for which there is no adoption demand are to be 'destroyed in the most humane and cost-efficient manner possible,' this is a controversial action, and is not commonly used (NRC, 2013).

Although human interference in wild horse population structure is opposed by many animal rights/welfare organizations, the BLM removes horses in a specific order based on likelihood of adoption and ability of those of reproductive age to maintain viable populations on the range. Initially, horses 0-5 years old are removed, followed by horses over 10 years old. Last to be removed are those horses 6 to 9 years of age (Bartholow, 2007). With an eye toward increasing the value of the mustang's adoptability and accomplishing range and herd management goals on various HMAs, the BLM has established numerous partnerships including (to name a few): Friends of a Legacy (Provides fertility control and water needs in McCullough Peaks HMA in Wyoming), Beatty Butte (Provides wild horse gather, fertility control and training programs in Butte HMA, Oregon), Idaho 4-H Weanling Training Program (University of Idaho 4-H Extension Program allows 4-H clubs to gain horsemanship experience and get young horses used to being handled); The Mustang Heritage Foundation (sponsors events that show off trained mustangs, assistance in finding adopters for horses and education efforts for teachers); and The Florence Wild Horse and Burros Training and Holding Facility (fosters a positive bond between the inmates and animals and ensures that the horses and burros are cared for and trained for personal use or for border patrol). Further efforts to increase adoption rates resulted in the BLM' adoption incentive (2019). This program allows qualified

adopters to receive up to \$1,000 when adopting an untrained wild horse (BLM, 2022).

In 2006, facing disapproval and complaints from the ranching industry, Senator Conrad Burns of Montana attached a rider to the Consolidated Appropriations Act (Burns Amendment, 2004) requiring BLM to sell excess animals greater than 10 years old or which have been offered for adoption three times unsuccessfully. In response, the "Rahall Amendment" (Rahall Amendment, 2007) was passed to limit implementation of the Burns Amendment by preventing appropriated funds to be used to facilitate the sale and slaughter of protected wild horses and burros. Since 2006, nearly every federal Agriculture Appropriations Bill has contained language prohibiting the use of federal funds to facilitate the inspection of horse meat, effectively ending horse slaughter in the United States (perceived as a victory for animal rights activists) (Government Accountability Office, 2008; Government Accountability Office, 2011).

The only upcoming promising management tool that has gained at least *partial* support from the BLM and USFS critics on both sides (i.e., ranchers who are concerned that unchecked herds will compete with livestock for food, and horse advocates who want BLM or USFS to keep horses on the range and decrease cattle numbers) is fertility control. For this reason, the BLM is exploring contraceptive methods and strategies for wild horse and burro populations. Although there is opposition by some animal activist groups, many believe fertility control is the only way to avoid what appears to be a standoff. According to Holly Hazard, senior vice president of programs and innovations for the Humane Society of the United States, and a partner with BLM on fertility control projects in several Herd Management areas: "We can't gather our way out of it. We can't adopt our way out of it" (Tayler, 2013, p. 1). The National Academy of Sciences came to the same conclusion in a

comprehensive two-year study in 2013. The NAS report recommended "widespread and consistent application" of fertility control, particularly the drugs PZP (Porcine zona pellucida) and GonaCon for mares and chemical vasectomy for stallions. Those drugs were deemed the most promising when considering their delivery methods, availability, efficacy, duration of effect, and potential physiological and behavioral side effects. The committee recommended these methods based on the evidence of their efficacy with other populations, notably the horses existing within the Assateague Island National Seashore just off the coast of Virginia and Maryland. Current collaborative management efforts for the state protected Salt River Wild Horses in Arizona have also demonstrated effective population control in the use of PZP (see Chapter Three). Scaling up use of these approaches to the larger and more dispersed horse populations in the western U.S. will be challenging (NRC, 2013). Furthermore, many animal activist groups are adamantly opposed to any management tactic that alters the horse's natural behavior and right to reproduce. Further research on lasting effects of fertility control are needed (see Chapter Four).

Empathy, Welfare, and Justice for All

No matter what tools are available or how sophisticated ecosystem management is scientifically, it will not reach its potential in the western U.S. with its abundant public lands unless it is effective public policy (Daniels & Walker, 1995). Successful species conservation policies must satisfy three criteria. They must be biologically possible (grounded in sound ecological understanding), economically feasible (monetary and nonmonetary benefits exceed costs), and culturally adoptable (consistent with prevailing norms and beliefs) (Firey, 1960). Efforts by BLM and USFS to remove and dispense of excess animals from the range face ongoing scrutiny, disapproval, and legal challenges by animal welfarists and animal rights activists concerned with the future of free-ranging herds and the care and concern

for captured animals. Such opposition highlight horse advocates' desire for a compassionate approach toward wildlife management and has resulted in the obstruction of traditional methods for population control.

Horse activists' and animal welfarists' moral concerns surrounding mustang welfare are numerous. One of the primary issues is the belief that the use of helicopters for removal of wild horses from the range results in increased fear and injuries for the horses. In this instance, family members from individual bands become separated, many foals, in their efforts to keep up with the running herd, literally run their hooves off, while others become orphaned. Some horses, unfamiliar with enclosures and extremely fearful, try to escape; broken necks have resulted in a number of horse deaths (American Wild Horse Campaign, 2020b; Loomis, 2017). Further activist/welfarist concerns for the mustangs revolve around a number of perceptions, including: the separation of wild horse bands or family units interferes with the right to autonomy and emotional well-being; the implementation of fertility control results in harassment, painful procedures, genetic selection and decrease in genetic viability; the confinement of wild horses in captivity leads to increased stress response and other concerns surrounding right to autonomy; the use of euthanasia or other lethal means to exterminate perceived excess horses leads to the loss of the right for wild horses to live out their natural lives; and the continuation of cattle grazing where wild horses roam results in unequal distribution of forage resources (American Wild Horse Campaign, 2020f; Return to Freedom, 2022).

While approval or opposition toward agency management draws attention to the public's unique moral concern for the mustang, their interpretation and endorsement of the ecological science utilized in current policy also plays a role in impeding current management efforts and has, in many instances led to unintended consequences for wild horses and rangelands not supported by members of any

stakeholder group (see Chapter Four). For acceptance and social legitimacy, policy must be adaptive and feasible, utilize the most appropriate science and technology, and result in low transaction cost (Daniels & Walker, 1995). Public support in contemporary American public policy requires solutions that are recognized as technically sound, and if people's lives are affected, they must have a voice in policy process. The increasing sophistication of ecological science and technologies utilized to measure change makes them less understood by the general public and creates a dilemma between the narrow politics of expertise and a broad politics of public inclusion (Daniels & Walker, 1995).

It's no wonder public perception and issues surrounding interpretations of ecosystem functioning are numerous. "Perception," as it is used in this dissertation, indicates a belief or opinion often held by many people; and implies awareness or insight on a particular subject (in this case, ecological science and ecosystem functioning). Perception is based on the "appearance" of reality and truth. How we perceive the world is determined by the lens through which we view it. Perceptions are influenced by a multitude of factors such as culture, geographic location, personal experiences, education, and exposure to media, including images, literature, and movies (Dalke, 2010). These perceptions are incorporated into the various narratives created by multiple interest groups. Animal welfare and animal rights advocates recognize free-roaming horses as a North American native wild species, symbolizing freedom and beauty. They are well deserving of a home on public rangelands or national forests – not only because of their native status, but because they play a vital role in ecosystem functioning. Ranchers, hunters, environmentalists and the government institutions that manage mustangs, however, view wild horses as a non-native species; and at times perceive them as pests that

compete with valuable native wildlife and livestock for forage and habitat (Buchman, 2016; Protect the Harvest, n.d.; Beever & Herrick, 2006; Beever, 2003).

The role wild horses should play within various ecosystems on public rangelands is determined by stakeholders' perceived mustang legitimacy on the landscape and the desired trajectory for the ecosystem – whether that be through a functionalist or compositionalist approach (rewilding or restoration). The designation and magnitude of suitable areas for populations of wild horses to roam revolves around various interpretations of ecosystem functioning, designation of role of predator, and competition with other native species. The rates of population increase among horses left to themselves is heavily embedded within discourse related to removal of horses and how this might lead to exponential growth. Wild horse grazing patterns and their impacts on vegetation and other wildlife and livestock fuel the debate over the need for grazing management of *all* ungulates and the consequences of trampling and seed dispersal. The assignment as well as degree of human involvement necessary to accomplish management goals is vital in the ability to monitor wild horse populations and provide emergency care, such as feeding or hauling water during droughts) (American Wild Horse Campaign, 2020b; Salt River Wild Horse Management Group, 2022; NRC, 2013).

Because domesticated horses have played a fundamental role in human history and hold a unique place in the hearts of numerous individuals, they evoke strong imagery and feelings, even among those who have had few to no interactions with them in real life. As current litigation over management of mustangs illustrate, the horse continues to occupy an intriguing and distinctive position in the complicated space between the wild and the domestic which arouses the caring and compassionate sympathies that many Americans cling dearly to in their relationships to their companion animals (Bekoff, 2013; Dalke, 2011; Bhattacharyya, 2012). This

position denotes a management plan that is mindful of the concern and attention reserved for the individual lives of animals whose welfare is regulated by veterinarians under the philosophy of “The Five Freedoms” (i.e., Freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury or disease, freedom to express normal behavior, freedom from fear and distress) (Gill, R., 2020.; Broom & Fraser, 2015; Mellor & Beausoleil, 2015; Campbell Centre for the Study of Animal Welfare, n.d.). At the same time, the image of the iconic wild horse exhibiting its natural, “wild” behavior (such as a stallion rearing in defiance against a competing male or bands of horses running freely across the landscape) stirs, in many people’s hearts, a profound sense of strength, beauty, and wild freedom. Ironically, such imagery implies a “hands off” policy – unlike that of the care and concern provided for companion animals – where free-roaming horses are left alone with no intrusions by humans. Nature can be harsh, and the public is deeply disturbed – and will not tolerate – images of starving, dehydrated suffering horses (A. Vera, 2018; K. Phillips, 2018; Pineo, 2018). Nor will they tolerate the dead carcass of a horse that enriches ecosystem function by providing forage to scavengers or enhances nutrient availability in soils. This dichotomy of care and concern is also represented in policy where, at times, mustangs are managed as domestic livestock (removed from the range if they do not possess a brand) and at other times they are managed as a protected wild animal under protection of WFRHBA.

While policy under WFRHBA protected free roaming horses from persecution; it also bestowed upon the horses the title of a “Cultural Heritage” species. Although the goal of this title was to safeguard the horses from the perceived persecution and inhumane treatment in the first half of the 20th century, it also resulted in a status for free-roaming horses that can neither be described as domestic or wild. And policy

reflects that. The title of “Cultural Heritage” species can therefore be manipulated by the public to show the importance of the mustang as an iconic symbol of freedom or discounted as a title employed simply to protect an animal that would otherwise be referred to as feral (Mott, 2014). In addition, this title leaves mustangs exempt from the potential benefits of policy that manages species assigned to *either* the livestock (domestic) or wildlife faction. It is important to note that the term “domestic” might be beneficial as it implies a concern for individual welfare under the established protocols adhered to by the American Veterinary Medical Association (the aforementioned “Five Freedoms”). Likewise, those species bestowed with the title of “native” wildlife might automatically be granted grazing rights to the landscape and could further be protected under the Endangered Species Act (see Chapter Six). Because mustangs are categorized by federal and state land management agencies as feral species (escaped domestic animal not-under care of humans, see Appendix A) and non-native (typically recognized as transplanted by humans), they are viewed by land managing agencies as un-authorized livestock or “invasives” (this continues to be debated) (Wild Horse Observers Association, 2018).

The upshot is that free-roaming horses are *not* tolerated in North American land management policies, unless they are found in designated protected wild horse management areas—identified as areas where horses were found when WFRHBA was enacted, and (as previously discussed) are unsuitable to meet the ecological and physiological needs of mustangs. The majority of U.S. management policies continue to call for removal of all unprotected free-roaming horses from public land. Further adding to the confusion is the “checker-board” composition of public and private land in the western U.S., a legacy of early U.S. land acquisition, disposal and development of the railroad that makes it difficult to manage the effects of free-roaming horses that roam outside of protected areas. In most all cases, policy

supports a management plan where the rights of native wildlife trump those of non-natives. Further rights are bestowed on wildlife if they are also classified as endangered (U.S. Forest Service [USFS], n.d.c; PRIA, 1978; BLM, n.d.b).

Current Policy: Unintended Consequences

Due to existing policy and evidence of unintended consequences of current management efforts, horse advocates are increasingly petitioning for expanded areas for wild horses to roam along with a decrease in the number of cattle that roam those same areas. At the same time, environmentalists, hunters and livestock operators are calling for strict adherence to land management policies that regulate native species and ecosystems as defined by the Leopold report of 1964 and other federal land management policies such as the 1934 Taylor Grazing Act, 1970 National Environmental Policy Act, 1976 Federal Land Policy Management Act (Taylor Grazing Act, 1934; National Environmental Policy Act, 1969; FLPMA, 1976; Leopold et al., 1963). According to the BLM, free-roaming horse populations are “overgrazing and destroying native ecosystems that have evolved over thousands of years, threatening hundreds of native wildlife species and people and communities across the West dependent on public lands for their livelihoods” (Garrott & Oli, 2013). The wild horse opponents view is that “invasive”, “feral” horses are simply *not* being managed. While cattle are continuously rotated from pasture to pasture, wild horses remain within their Herd Management areas year-round. Because of this “*mis-*management,” the horses (in their belief) are destroying the landscape. Much of the research they cite, including work by U.S.G.S. ecologist Erik Beever and Oregon State University’s rangeland ecologist Kirk Davies, includes issues involving alleged wild horse overpopulation which has led to overgrazing and trampling. These areas showed higher vulnerability to invasive plant species (Beever et al., 2008) such as cheatgrass (*Bromus tectorum*) (Knapp, 1996); increased soil compaction (Beever &

Herrick, 2006) diminished soil aggregate stability (Davies et al., 2014) and an increase in water runoff (Beever et al., 2008). Additional wild horse impacts were shown to negatively affect populations of native wildlife species such as reptiles (Beever & Brussard, 2004) and the threatened Greater Sage-Grouse (*Centrocercus urophasianus*) (Beever & Aldridge, 2011; Davies et al., 2014). Competition with native ungulates for resources is also cited as an increasing concern. Competition for water is especially prevalent between wild horses and Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) (Coates & Schemnitz, 1994), bighorn sheep (*Ovis 6 canadensis*) (Ostermann-Kelm et al., 2008), elk (*Cervus elaphus*) (D. Perry & G. Perry, 2015), and pronghorn (*Antilocapra americana*) (Gooch et al., 2017; Hall et al., 2016; Hall et al., 2018). In addition to rangeland degradation, such increasing numbers of wild horses leads to their increased suffering from disease, starvation, and dehydration (NRC, 2013). To add fuel to the ranchers' and hunters' fires, mustang existence on the landscape has resulted in a decrease in numbers of cattle allowed to graze as well as a decrease in numbers of Game tags (Silver [Center for Biological Diversity], personal interview, 2020; Porter [rancher], personal interview, 2020; Fleischner, 1994). Regardless of the evidence of habitat degradation, however, mustang advocates adamantly contend that it is the overabundance of *cattle* not horses that are destroying the landscape.

Although stakeholders on both side of the wild horse management debate are discussing the same animal, *Equus ferus caballus*, the use of various titles ("feral," "wild," "native," etc.) implies a specific management preference. It also mandates differences in the *types* of questions ecological and behavioral science must answer to provide proper management. The inability for managers to incorporate the use of ecological science that supports federal policy or the implementation of behavioral science that addresses cultural concerns and emotional wellbeing of horses has left

the BLM, the USFS and policy makers in a conundrum. They have been forced to inquire about what is lacking in their current management plan and to question why their scientific methods and management policies have left them powerless to do their jobs. As public servants, the BLM and USFS are mandated to not only manage wildlife and habitat, but also manage the humans who desire to enjoy both. The failure for proponents on either side of the dispute to come to a consensus regarding free-roaming horse management, has left stakeholders demanding justice through new legislation in the courts, further delaying management of the mustangs.

Effective Policy and Social Legitimacy

Although mountain lions do an adequate job of controlling wild horse numbers in a few remote areas, according to the BLM, the vast majority of wild horse herds need humans to control increasing populations and fulfill this valuable role of predator. As of 2020, horses removed from the range far exceeded adoption demands. Furthermore, long-term holding is expensive for the government. Current management efforts have resulted in roughly 55,000 mustangs in holding facilities and an approximate annual bill of \$55 million-dollars (two-thirds of the BLM's budget) for taxpayers. There is broad consensus among stakeholders that existing management for mustangs is neither ecologically nor economically sustainable and that the ever-increasing number of horses removed from the range and kept in long-term holding facilities should be mitigated (NRC, 2013; Ryden, 1990; de Steiguer, 2011; Garrott & Oli, 2013).

At the same time, a more hands-off management approach, which many horse advocates have long supported as a general principle in wildlife management, leads to over-population in many arid wild horse territories or Herd Management Areas where there are no large predators, namely mountain lions or more rarely, wolves, to naturally regulate herd size. Unfortunately, prey species populations in an

ecosystem without top down control end up in scenarios such as the 2018 tragedy at Gray Mountain in Arizona, where nearly 200 wild horses succumbed to a slow and painful death from starvation and lack of adequate water resources (more on this case in Chapter Four) (Philipps, 2017; NRC, 2013; K. Phillips, 2018). This example of an unintended consequence is highly unacceptable to the very groups objecting to any involvement in wild horse populations. Due to the fact that human intervention in nature has irrevocably blurred the nature-culture (wild/domestic) boundary many animals worldwide are now finding themselves in a “mixed category” environment where wild animals are either transitioning to captivity or domestic animals are transitioning to the wild (Reed, 2008; Gaunitz et al., 2018; NRC, 2013; Klaver et al., 2002; Sterba, 2012). Current U.S. protection/animal welfare policies do not address these gray areas.

The sentiments the public persistently expresses for current activities associated with mustang welfare have intensified to a divisive level that continues to impede administrative actions. The current low rate of adoptions coupled with the similarly small number of wild horses and burros rounded up and sent to corrals or pastures—usually 4,000 or so a year—along with the spotty success with fertility control and sterilization efforts and the restriction to euthanize animals only when they are sick, means the population on public land will soon exceed 120,000 (BLM, personal interview, 2017). Much of the political concern leading to population control stalemate focuses on current policy’s inability to address: 1) The difficulty in managing a species that is classified neither as livestock or wildlife; 2) The confusion in providing proper welfare at either the ecosystem level (managing for good “fitness” of the population) or individual level (managing for affective state, or emotional concerns); and 3) The distinction of mustangs as either a “feral,” “non-

native” species to be removed from the landscape or a “native” (“wild”) species with protected rights.

And yet could other ways of *knowing* or monitoring horses and their habitat be incorporated into current management plans or integrated in the collection of ecological and behavioral data to better inform decision-making about land use and conservation?

The ecological concerns posed by federal and state land management agencies and policy supporting a compositionalist approach towards management have led to the gathering of data that promotes favoritism towards native wildlife and the mandate to provide for multiple use of public lands. In so doing, managers and administrators are simultaneously ignoring aspects of wild nature, including individual animal behavior interests, that foster a concern for the emotional and psychological well-being of all wildlife. Management policy that ignores the affective states (emotional well-being) of wildlife, will no longer be tolerated by animal rights groups and many welfare activists.

To project how the management of wild horses in the West should be factored into the goals of rangeland management, it is necessary to understand the economic and ecological reality of the unique regions they inhabit as well as the stories or narratives conveyed about the land and history of the horses themselves. Both the science and the narratives surrounding the horses are powerful in determining future trends and the policies that affect the local culture and the land itself. Because much of the controversy associated with natural resource management rises from unsettled ethical issues about how humans *ought* to relate to nature in an uncertain and changing world, a better understanding of the values that frame stakeholder and manager attitudes toward free-roaming horses and their place on the landscape – and how these values interact with scientific claims and management practices – will

provide the BLM and USFS with insight into how different segments of the public interpret and envision free-roaming horse policy. Such knowledge will assist in efforts to bring currently polarized interest groups (stakeholders) into a deliberative process and will encourage further collaboration between agencies and stakeholders (Bhattacharyya et al., 2011; Fraser, 2010, p. 123; Decker et al., 2012).

Public input on decision making and continued involvement through collaborative efforts between agencies and the public requires implementing a flexible plan, monitoring its effects, and adjusting as needed. Proponents of this process suggest it allows managers and stakeholders the ability to learn from management outcomes in the face of uncertainties, improves resource management and subsequent decision making and is essential in gaining public support for free-roaming horse management. An ecologically and socio-politically sound management program is possible when ecological science is combined with social science (Riley et al., 2002; Decker & Chase, 1997; NRC, 2013; Nimmo & Miller, 2007; Sayre, 2005). Engaging the public in a clearly articulated and transparent process of public participation and decision-making and examining their belief systems and values regarding mustang management can increase public acceptance of and confidence in BLM and USFS management decisions, and also inform and challenge these decisions. Ideally, the results of this deliberative process should lead to a more socially and ecologically sustainable approach to free-ranging horse and burro management.

Presently, there is a dearth of published scientific studies of the social, ethical, and cultural aspects involved in free-ranging horse management. Apart from some papers on peripheral issues like the economic aspects of mustang adoption and the experience of adopters, issues related to the politics at work, and one broad ethnographic study, no recent published qualitative studies on the attitudes of the

various publics engaged in these conflicts have been identified. A review of social considerations of U.S. mustang and burro management by the National Research Council confirmed this lack of relevant social science research despite it having been requested from the BLM two decades earlier (NRC, 2013; Decker et al., 2012; Linnell, 2015).

There are 270 separate Herd Management Areas covering ten states in the Western U.S, managed by BLM and 53 wild horse territories managed by the USFS (USFS, n.d.d). Due to the fact that there is not one big overarching answer to the wild horse management issue, a detailed, in-depth case study is necessary in order to illustrate the kinds of factors that contribute to the debate over the animal, and that are potentially relevant in reaching a successful solution (i.e., a well-reasoned management decision that is informed by expert as well as public opinion). Management implications need to be examined on a case-by-case basis. Factors that influence public opinion or management in one area (e.g., urbanization, ecosystem dynamics, demographics and economics) may differ in another. Lessons learned from the triumph or failure in one context may be utilized by the BLM and USFS in other wild horse management areas or territories.

The Heber Case

Figure 2

Band of Wild Horses Forage in the Apache-Sitgreaves National Forests (J. J. Murphree, 2017).



Was it something in the collective memory of Athabascan people that recognized the shape, feel and smell of a horse . . . some ghost of a recollection of an all but forgotten time when wild horses swept across the steppes of Asia? Whatever the mystic connection might be, Navajo and Apache people saw the horses of the Conquistadors as a gift of the Creator and adapted them readily to their own uses. (Baeza, 2010)

Controversy

Currently, several bands of free-roaming horses, classified as “unauthorized livestock” by the USFS, are wandering portions of the Apache-Sitgreaves National forests (ASNF) near Heber, AZ. According to federal policy, the horses must be removed. The position taken by the USFS incorporates the belief that these “feral” horses migrated on to forest land from the adjacent Fort Apache Indian Reservation after the infamous Rodeo-Chediski Fire in 2002 burned the boundary fence, opening up the area for their migration (Granillo, 2015). Animal activists and animal welfare groups, however, claim the horses found in these areas are wild descendants from Spanish conquistadors’ horses that have roamed the area for over 500 years. Consequently, in their view, these horses are protected by the 1971 Wild and Free Roaming Horses and Burros Act (WFRHBA). Horse advocates further claim that the USFS is not recognizing the wild horses’ legally protected home: the federally designated Heber Wild Horse Territory (HWHT) located within the northeast portion

of the ASNF. The HWHT was established in compliance with WFRHBA and its subsequent implementing regulations. As a result of WFRHBA, "Wild Horse" became a *legal* term used by the USFS that further implied a protected status to unbranded and unclaimed horses and their progeny associated with Wild Horse Territories. These protected horses were considered wild and free roaming in these areas when WFRBHA (1971) was enacted. Ironically, the HWHT is currently not utilized by most of the free-roaming horses in the ASNF. A majority are found outside its limits (AZ Game and Fish, personal interview, 2017).

Wild Horse Territory Study Site

The Apache-Sitgreaves National Forests encompass approximately 2,015,500 acres (815,644 hectares) in east-central Arizona along the Mogollon Rim and White Mountains. Elevation on the Forest ranges from approximately 3,500 ft. (1,067 m) to nearly 11,500 ft. (3,505 m) on Mount Baldy. The geographic location of the Apache-Sitgreaves, coupled with a wide elevational gradient, provide suitable conditions for a multitude of vegetation systems and a wide diversity of organisms including big game animals, such as antelope, elk, deer and bighorn sheep, endangered and threatened species including Gila Trout, Lesser Long-Nosed Bat, New Mexico Meadow Jumping mouse and the Mexican spotted Owl. Predators species include mountain lion, black bear and the recently re-introduced threatened Mexican Wolf. The Apache-Sitgreaves are also home to the headwaters of a number of important rivers that originate in the White Mountains including the Black, Little Colorado and San Francisco Rivers. These rivers, along with others in the area, are of critical conservation concern as they host many vegetation systems and organisms which are limited in distribution and imperiled in the Southwest (Vander Lee et al., n.d.; Loidi & Fernández-González, 2012).

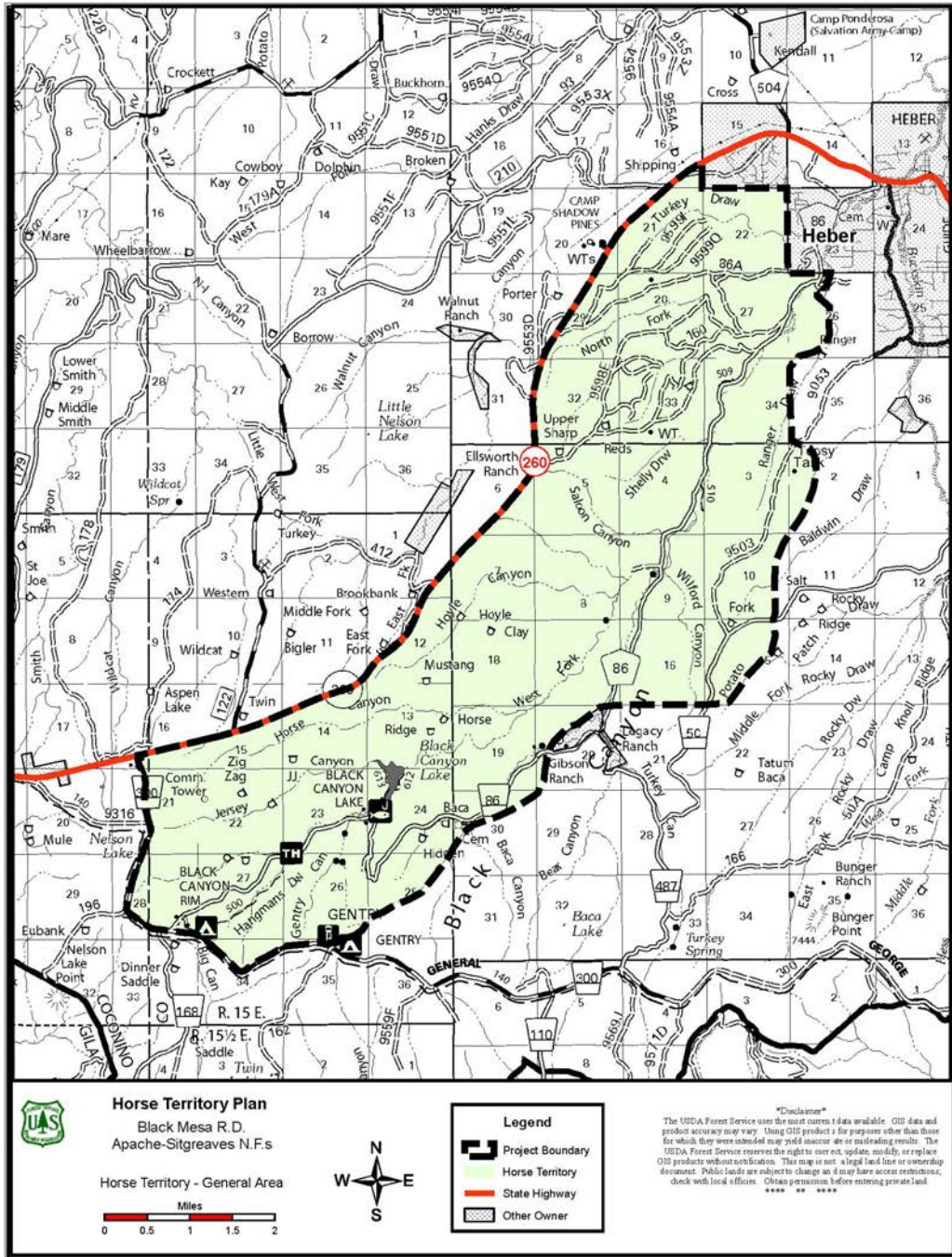
The numerous potential natural vegetation types within the Apache-Sitgreaves National Forests are comprised of ponderosa pine forest (46.0%), pinyon-juniper woodland (19.0%), Madrean encinal woodland (13.7%), mixed conifer (7.3%), semi-desert grassland (3.7%), Great Basin/ Colorado Plateau grassland and steppe (3.1%), sub-alpine grassland (2.8%), aspen forest and woodland (1.4%), and spruce-fir forest (1.0%) (Vander Lee et al., n.d.; Black Mesa Ranger District, 2015). According to The Nature Conservancy, these potential natural vegetation types (PNVTs) are classified as coarse-scale groupings of ecosystem types that share similar geography, vegetation, and historic ecosystem disturbances such as fire, drought, and native herbivory. Such classifications represent the climax vegetation type that would dominate a site under natural disturbance regimes and biological processes. Although some ecologists critique the validity and usefulness of PNV due to the inability to predict ecological succession and hence the validity of any prediction about future succession, they remain in USFS policy as desired trajectories and outcomes for the future of ecosystems after disturbance.

The HWHT encompasses approximately 19,700 acres within the Black Mesa Ranger District on the Sitgreaves portion of the ASNF, five miles southeast of Heber-Overgaard in Arizona (Figure 4) (Englebert, 2017; USFS, n.d.c).

The north/northeastern portion of the Territory is bounded by the community of Heber, with houses, roads and fences. The west/northwest flank of the Territory is bound by the Highway 260 corridor fence. The Fort Apache Indian Reservation (FAIR) of the White Mountain Apache Tribe and the Mogollon Rim with its steep canyons and ridges forms the southern boundary of most of the Territory.

Figure 3

Map of Heber Wild Horse Territory (USFS, n.d.c).²



² The Territory is about 2.5 to 3 miles wide by about 7 miles long, centered about 5 miles southwest of Heber, Arizona. The designated boundary runs roughly in a north-easterly direction from its southern boundary on Forest Road 300 to the northern boundary which is private land.

Two livestock allotments (60% of the Black Canyon allotment and 6% of the Heber allotment) overlap the Territory. Permitted livestock grazing includes King Phillip, Sharp Hollow and Sterner pastures of the Black Canyon allotment and parts of the Gentry and Bunger pastures within the Heber allotment.

The human population in the Heber area is estimated at 15, 792 (as of 2017) and roughly 22,000 in the bordering Fort Apache Indian Reservation (Federal Reserve Bank of Minneapolis, 2019). The economy of the associated Heber area is based on forestry, agriculture and tourism. The White Mountain Apache Tribe proudly identify with the excellent fishing in their native land (the Apache Trout is found nowhere else in the world) as well as the quiet camping and awe-inspiring hikes. Drawing in hunters from all over the globe, this area is known as one of the best places in the world for trophy elk hunting. Some of the largest black bears in Arizona also inhabit the reservation lands (White Mountain Apache Tribe, 2020).

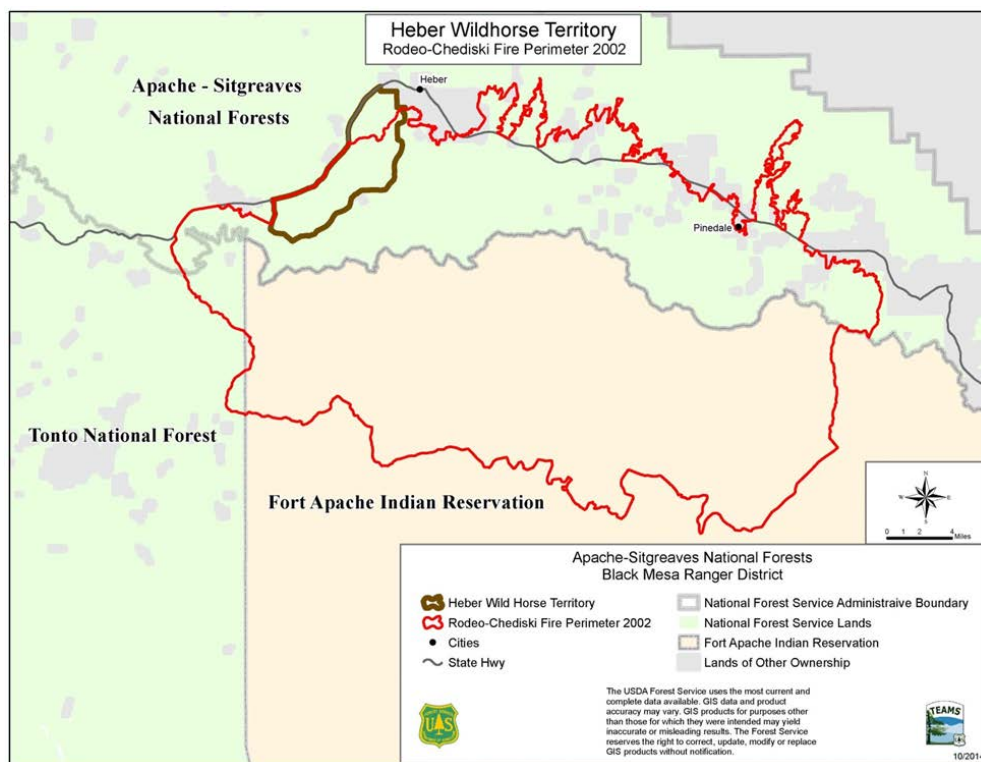
Fire and Transformation

In June of 2002, the 460,000-acre Rodeo-Chediski Fire started on the Reservation and burned north onto the Forest, resulting in extensive damage or destruction of the Reservation boundary fence. Approximately 75% of the Territory was burned resulting in significantly altered vegetative conditions (Figure 5). Immediately following the fire there was minimal forage available in the burned area and horses and wildlife alike had to move to wherever forage, cover, and water could be found. By the winter of 2002 the Fort Apache Reservation had substantially reconstructed the boundary fence, however, gaps remained in areas where gates and cattle guards were waiting to be installed. As dead trees began to decay and fall, they damaged the new fence. As a result, there was no effective barrier to livestock for several more years. Burned areas that were predominantly dense stands of trees,

were gradually converted to a grass and brush vegetation stage, providing excellent forage for ungulates (Englebert, 2017; Black Mesa Ranger District, 2015).

Figure 4

Geographical Information System (GIS) Vegetation Structural-stage-modeling Was Completed on Representative Stands Within the Territory to Estimate What Would Occur as the Trees in This Burned Area Regenerate (Englebert et al., 2017).³



According to the USFS, the combination of easy access to the forest for reservation horses and prime forage conditions prompted the free-roaming horses to begin to establish themselves on a more permanent basis on the ASNf throughout the 166,000 acres where the fire had burned (Englebert, 2017). Although horse

³ It is estimated that present forage production levels will decrease as the tree cover increases. This canopy closure is primarily due to the regeneration and growth of trees and to a lesser degree increased brush, with the most rapid response coming from juniper and oak.

advocates doubt the USFS's counts, USFS surveys completed since 2005 indicate that horse numbers are increasing. That raises concerns for local permittees (ranchers with federal agreements to graze cattle on public land).

Larry Gibson, a third-generation rancher who oversees the Heber allotment in the Apache-Sitgreaves National Forests, has expressed his concerns over equitability and proper allocation of forage: "we go and measure the grass before the cows ever get there. There may be 80-percent usage before we ever get there...If the horses have eaten the feed, you can't bring your cattle up" (Granillo, 2015; Gibson [rancher], personal interview, 2018). During his 60 years in the area, Gibson and childhood friend, local 4th generation rancher Rodney Porter (permittee on the Black Canyon allotment) have witnessed the wild horse population increase exponentially. Without the ability to graze their cattle, their frustrations have mounted. Grazing fees (paid to USFS) run \$1,600 a month. Consequently, they feel they are not getting their money's worth (Porter [rancher], personal interview, 2018). According to Gibson (as quoted in an article by Granillo), there is one solution to protect both the ranching industry and the habitat:

So in my opinion, the best thing to with these up here would be remove every one of them. Whether they go to adoption, or, you know, I hate to say it, euthanized or to a slaughter plant...I mean that sounds kind of harsh, but something has to be done with them. (Granillo, 2015, p. 2)

Local horse advocate and wild horse photographer Mary Hauser (also quoted by Granillo) asserts that these horses deserve extra federal protection as she claims they are descendants of mustangs brought here by Spanish conquistadors.

Characteristically, they have an almond shaped eye. The shorter back. Their nostrils are thinner as far as the texture and thickness of the skin and that's all the Spanish look. So that tells me that these horses really are carrying the blood of those Spanish horses. (Granillo, 2015, p. 2)

At the time the federal horse act was established, local historian Jo Baeza suspects Hauser's analysis might be true.

In 1540, Francisco Vázquez De Coronado came through the White Mountains with a huge entourage. Thousands of horses. I believe that those were the original horses of the Mogollon Rim – the descendants of Coronado’s herd. (2010, p. 1)

Protected Wild Horses or Unauthorized Livestock

The WFHB Act requires the USFS and the BLM manage wild horses in a manner to achieve and maintain *a thriving natural ecological balance* and multiple-use relationship on public lands.

To attain such a balance, horses on the Apache-Sitgreaves National Forests should be managed to ensure significant progress is made toward achieving Forest Plan standards and guidelines for upland vegetation and riparian plant communities, watershed function, and habitat quality for animal populations, as well as other site-specific or landscape-level objectives, including those necessary to protect and manage threatened, endangered, and sensitive species. (USFS, n.d.a; USFS, n.d.b)

Under current National Forest policy, deer, elk, pronghorn, Bighorn Sheep and other wild ungulate populations are classified as “wildlife” and are managed by hunting permits purchased by sportsmen. Domestic cattle are classified as “livestock” and are managed through grazing permits purchased by ranchers. Free-roaming horses are classified as “unauthorized livestock” and are removed for auction (Arizona Game and Fish, 2022; USDA 2017; Englebert, 2017). The free-roaming horses are classified as “wild” and are protected under the Wild Free-roaming Horses and Burros act of 1971 *only* if they are located *within* the HWHT (USFS, n.d.b; USFS, n.d.a). Because the HWHT remains unfenced, horses continue to roam in and out, altering their legal status as they do so. Developing and implementing the components of a “territory plan” is required under the provisions of the Act, however the 1987 ASNF Land and Resource Management Plan did not establish a proposal that included an appropriate management level for the horses in the HWHT rather the plan simply stated “maintain existing wild horse territory and herd” (USFS, 1987). Classifying the horse and determining how to manage it, remains a problem.

Litigation and Collaboration

In 2005, the USFS estimated approximately 300 “unauthorized horses” within the ASNF. Concern that the increased number of these free-roaming horses were adversely impacting the recovery of the burned lands, the USFS advertised a contract to gather and remove 120 “unauthorized livestock.” Public opposition and claims that the USFS was not recognizing the federally protected status of the horses in the HWHT resulted in a court injunction. In 2007, the USFS entered into a Stipulation Agreement whereby the agency agreed to refrain from gathering and removing horses from within the 2 million acres of the ASNF until a territory management plan that includes public input into the proposed management plan as required by the Federal Land Policy Management Act could be finalized (Englebert, 2017; Black Mesa Ranger District, 2015; U.S. USFS, 2007; FLPMA, 1976; NRC, 2013). Public input into this HWHT proposed management plan was provided to the USFS through the efforts of a working group consisting of a diverse group of stakeholders and agency advisors (cattle growers, nature conservationists, animal activists, specialists in the field of horse management, Arizona Department of Agriculture, Arizona Game and Fish, USFS, and the BLM). The working group was convened by the Arizona State University School of Sustainability and mediated by Southwest Decision Resources, an independent facilitator located in Tucson. Selection for the working group was determined by an interview process in spring 2017 by ASU and Southwest Decision Resources, a process that ensured each working group member had knowledge of the Apache-Sitgreaves Forests and Heber area, knowledge of wild horses, could provide valuable input to the working group and could collaborate well with others (Arizona State University, n.d.).

Goals of the Heber Case Study Collaborative Process were to: 1) Provide input into the development of the proposed action (to be analyzed under the National

Environmental Policy Act [NEPA]) for the HWHT Management Plan and include a monitoring approach including measurable indicators and protocols for incorporating information into an adaptive management framework; 2) Provide a platform for learning, analysis, and discussion that strives for solution-oriented contributions to the HWHT Planning process; 3) Encourage collaboration (but not necessarily consensus) in development of contributions to the HWHT planning process; 4) Provide opportunities to discuss broader issues, such as horses outside the territory across the greater Forest landscape and provide input into other territories within the state and other western rangeland; and 5) Explore and identify potential funding sources and partnerships for monitoring and plan implementation (fence repair, infrastructure, etc.) (Arizona State University, n.d.).

The HWHT Working Group began meetings in July, 2017 and completed its last meeting in October of 2018. Recommendations were filed with USFS in November of that year. The first of several public comment periods on the HWHT Management Plan occurred in February of 2020. The Environmental Impact Statement was also released for a 40-day public comment period in 2020 followed by a completed Heber Wild Horse Territory management plan in 2021. At that time, various group members had the opportunity to continue their collaborative efforts with the USFS through monitoring and other citizen science efforts.

Corralling the Project

The Heber case raises deep questions encompassing the history, science, ethics, policy, and culture embedded within the wild horse management dispute. My dissertation is an examination of these elements and how they intertwine. Examining the science and policy surrounding the Heber wild horse management case study, along with stakeholders involved, their desired management plan, and especially, the ethical attitudes and rhetoric they use to describe wild horses, provides insight into

how various stakeholders' understand the science that informs management of wild horses and the values behind what their belief for proper management of wild horses might be. This should increase understanding about how different knowledge claims and environmental values interact and play out in actual wildlife management discussions and how these influence the ongoing development of wild horse policy and management. Although the controversy over the free roaming horses in the Heber Wild Horse Territory is a struggle over wildlife and land management, the contending parties may be projecting different values, behavioral/ecological understandings, and cultural meanings on the horse which are diametrically opposed. It is possible that different underlying views of nature, i.e., as a system requiring intensive management ("heavy handed" approach) or as functioning best when the human hand is significantly minimized ("hands off" approach) may be at the root of some of these disagreements; a conclusion that has been drawn in other similar studies of wildlife management and ethical conflict (Dizard, 1999). Because the ethical division over the horse and its management in the HWHT has led to protracted conflict and divided stakeholders (Fernanda, 2015; Stuart, 2015; Granillo, 2015), there is a need to come to some sort of pragmatic consensus (or more accurately, convergence) on what to do regarding wild horses, a common ground on the management problem that can be reached even in the face of deeper moral and philosophical disagreement about the value or worth of the horse and its habitat (Norton, 1991; Minter, 2012). Without a strategy for accommodating contradictory values, moral confusion and ethical dilemmas will remain common (Ramp & Bekoff, 2015). Furthermore, it will be difficult to build broader support for management decisions without a fuller understanding of the reasons for disparate values regarding free-roaming horses and coming to grips with why different publics see things and value nature in different ways (NRC, 2013; NRC, 2005; Patterson et al., 2003). The

National Research Council noted that public opinion was the “major motivation behind the wild horse and burro protection program and a primary criterion of management success,” and therefore, control strategies must be responsive to public *attitudes* and preferences and cannot be based only on biological or cost considerations (NRC, 2013, p. 275).

Driving Questions of this Study

Over the past two hundred years, the value and role of the wild horse on the North American landscape has transformed from that of precious commodity to near indifference to one of intense scrutiny as a result of various interpretations of the horse-human (bio-social,) horse-landscape (bio-physical) and horse-economy (bio-political) relationships. The scientific methods historically used to manage horses and their habitat, and the dominion theology embedded within its philosophy have recently been called into question. This study was designed to explore the ways in which different types of knowledge (narratives) surrounding the understanding of free-roaming horses and the land in the Heber Wild Horse Territory in Arizona, could be combined to better inform decision-making about land use, conservation and animal welfare. In an attempt to find common ground among various interest groups and assist federal agencies in their effort to sustainably and ethically manage wild horses on public landscapes as well as contribute to the discourse surrounding the wild horse management dispute, my aim is to critically investigate the diverse opinions held by various interest groups pertaining to the welfare and management of wild horses and examine how they have been historically influenced by: 1) Their value of the horse; 2) Their interpretation of the management issues such as wild horse population numbers, animal welfare concerns and habitat suitability; and 3) Their interpretation of and justification for the science used in ecosystem management. My overarching goal will be to determine how these diverse values

affect support for current policy used to regulate wild horse population numbers and to provide recommendations for changes in policy where needed.

Given the complexity of issues involved, the most effective way to analyze the challenges surrounding free-roaming horses involves a multi-disciplinary approach that acknowledges the unique relationships between our perceived relationship to nature and our philosophy for environmental management by illustrating the ways in which free-roaming horses are part of both cultural and ecological relationships in the Heber Wild Horse Territory and surrounding areas. Specifically:

1. How do different stakeholders in the Heber Wild Horse Territory Management dispute (e.g., ranchers, sportsmen, environmental groups, horse advocates, Arizona Department of Agriculture, USFS, Arizona Game and Fish, BLM and specialists in the field of horse management) interpret (in terms of natural history, animal behavior, and ecology) and value (in terms of ethics) free-roaming horses, and how do these diverse understandings (narratives) and ways of valuing nature and horses specifically, influence what they believe is the best management for free-roaming horses? How can this understanding assist in management efforts to find common ground among stakeholders involved in the wild horse management dispute and inform land use planning and conservation efforts surrounding wild horse management?
2. What lessons can be gained for wild horse management based on output of the HWHT working group and how might managers and policy makers adjust their protocol to accommodate the changing needs of the public?
 - How will a “successful collaborative” be measured?
 - How does the selection process for membership in collaboratives affect productivity in working group meetings?

- What types of social interactions within the Collaborative working group lead to trust building, institutional development, and social learning?
- How will stakeholder attitudes or actions surrounding wild horse management (or other group members) be influenced by activities and membership in the HWHT working group?
- How can knowledge gained be applied to free-roaming horses in other herd management areas or to free-roaming horses that do not fall under the protection of the Wild Free-Roaming Horses and Burros Act?
- What are the similarities and differences in management approaches and “successful” collaborative efforts for federally protected Heber Horses and State protected Salt River horses in Arizona?

Agencies dealing with contentious issues such as the wild horse management debate, must moderate and balance the impact of conflicting objectives in their desire to meet the needs of the public. Developing a framework for decision making requires, first and foremost an understanding of the link between the ethical and scientific issues surrounding wild horse management (for example, determining how free-roaming horses should be classified and how much human involvement) and practical management challenges (e.g., sustainability, economic burden, animal welfare concerns), and is crucial in efforts to develop appropriate policy or management strategies. Due to the fact that much of the controversy associated with natural resource management rises from unsettled ethical issues about how humans ought to relate to nature in an uncertain and changing world, a better understanding of the knowledge and values that frame stakeholder and manager attitudes toward free-roaming horses and their place on the landscape will provide BLM and USFS insight into how different segments of the public interpret and

envision free-roaming horse policy. This in turn will assist in their efforts to develop adaptive, collaborative measures to manage free-roaming horses.

Research Purpose

My research into the Heber wild Horse Management controversy is motivated by a desire to more closely align the objectives of socio-ecological research to address problems (and solutions) that could potentially generate more favorable societal outcomes for mustang management. A qualitative human dimensions study on the HWHT Working Group contributes to understandings into wild horse management controversies and could assist in conflict resolution for other Herd Management Areas or Wild Horse Territories. The results of this study will hopefully provide USFS and BLM managers as well other policy decision-makers, with knowledge on the cultural values, attitudes, and social acceptability of specific management methods held by various stakeholders involved in wild horse management. Awareness of potential cohesion or disparity among groups offers insights and approaches for conflict management and opportunities to build trust. It will also assist in the realization that conflicts might stem from differences in various interpretations of ecological science and perceptions of animal welfare and not necessarily to differences in desired outcomes for the forest itself.

Investigating the horse's role and function in historical, ecological, and social-cultural contexts informs and shapes an understanding of the meaning humans give to them. This valuing of the horse as well as stakeholders' interpretation of the science used to manage them, could provide insight into the various stakeholder desired wild horse management approaches. Such knowledge will enlighten conservation planning and land use management by enhancing public land managers' ability to collaborate with and find common ground for various sectors of the public in their efforts to build trust and develop a public approved, sustainable

wild horse management plan. Knowledge of the contrasting perceptions of the horse's significance on North American landscapes offers a unique view into the human relationship to nature as well as the justification for the science behind management. It also provides awareness into the use of science or other ways of "knowing" that have become increasingly vital to the management of all wildlife. My aim is to analyze the factors that have led to the disconnect between public values of wildlife and public policy for wildlife management. Such knowledge will assist in efforts to bring currently polarized interest groups (stakeholders) into a deliberative process and will encourage further collaboration between agencies and stakeholders. Furthermore, these insights will contribute to the ongoing discourse surrounding various philosophical approaches towards management between practitioners in animal welfare science and conservation biology.

Because the horse holds a special status among the U.S. public, effective management must address the appropriate physical, psychological and social concerns of free-roaming horses and employ a multi-disciplinary approach towards management that crosses the boundaries of numerous fields of research including conservation biology, animal welfare science, wildlife and ecosystem management, natural resource and environmental policy, and economics. Stakeholder interests surrounding wildlife (and free-roaming horses specifically) are often quite diverse depending on a range of variables which must be considered when making management decisions (Ludwig, 2001; Decker et al., 2012).

Methodological Approach

While traditional conservation biology has historically been dominated by biological approaches and almost exclusively quantitative in its analytical techniques, current research frequently employs qualitative methods developed in the social sciences to collect information, or ascertain why and how decisions are made.

Qualitative approaches have become essential in tackling the “wicked” problems presently facing conservation, typically framed by incomplete knowledge and potentially contradictory outcomes (Rittel & Webber, 1973). Existing research has shown that disputes surrounding wild horse management are often embedded in disparities among groups’ cultural values (especially the moral principles or ethical concerns reflected in their “valuing” of wild horses) and attitudes (especially opinions and resulting social acceptability of wild horse management methods) (Rikoon & Albee, 1998; Rikoon, 2006; Nimmo & Miller, 2007; Bhattacharyya & Murphy, 2015). The goal of the still developing field of human dimensions of wildlife management is to integrate social science with human-wildlife relationships to improve wildlife management and conservation efforts by providing managers with information about public values (Manfredo & Teel, 2008). Such approaches are vital in efforts to analyze the diversity of value positions among different stakeholder groups.

In an effort to explain conflict involving wildlife and environmental management decisions, social researcher Paul Stern and colleagues introduced a framework known as the value–attitude–behavior (VAB) hierarchy (Stern et al., 1995). The VAB framework illustrates how values (drawn from a cultural context) lead to general beliefs (attitudes or a particular ‘narrative’). From these beliefs specific behaviors arise (support or opposition to management). Through the application of the VAB theoretical framework and interrelated techniques, numerous studies of public attitudes toward wildlife and other natural resource issues have evaluated attitudes toward wildlife (Manfredo & Teel, 2008), including “problem species” such as coyotes (*Canis latrans*) (Sponarski et al., 2015), wolves (*Canis lupus*) (Bruskotter et al., 2009; Jacobs et al., 2014), and moose (*Alces alces*) (Browne-Nuñez & Vaske, 2006), and feral species such as feral pigs (*Sus scrofa*). My assessment of the Heber Wild Horse case has been inspired by the Values

Attitudes Behavior Hierarchy and its use in determining the relationships between a person's values (assignment of meaning, goodness or worth) and their attitudes (Zivin et al., 2000), specifically the social acceptability of specific management approaches.

Qualitative Analysis

The Heber Case reveals the saga of the development and management of the Heber Wild Horse Territory, set at the base of the White Mountains within the Apache-Sitgreaves National Forests, and highlights the cultural aspects of the human actors, as well as the interaction of wildlife, livestock and mustangs entangled in this highly contested land management dispute. Through an ethnographic approach, the narrative not only traces stakeholder attempts to develop a management plan for the horses; it also provides insight into stakeholders' perceptions of the science used to manage public rangelands and their concern for the physiological and emotional welfare of the horses.

The reliability and qualitative rigor of this study were ensured by abiding to the standards set forth by social researchers Yvonna Lincoln and Egon Guba in *Naturalistic Inquiry* (1985). Lincoln and Guba proposed a format for naturalistic inquiry—described as an inductive scientific method of analysis – as an alternative to positivistic inquiry, which focuses on traditional, quantitative deductive methods. Naturalistic inquiry is characterized by research in natural settings. Its use of qualitative methods include purposive sampling, (intentional selection of informants based on their ability to elucidate a specific theme, concept, or phenomenon), inductive analysis (the use of observation to come up with a hypothesis), and grounded theory approach (continuous interplay between analysis and data collection). In addition, the naturalistic approach utilizes a case study reporting mode that incorporates the tentative application of findings, and special criteria of

trustworthiness (Lincoln & Guba, 1985). In line with this research ontology, the investigator studies real-world situations as they unfold naturally instead of manipulating research outcomes a priori. Moreover, the researcher recognizes the existence of multiple constructed realities (various narratives or perceptions of the issue).

Further inspiration for my approach was drawn from sustainability scientist Janet Stephenson in her paper "The Cultural Values Model: An integrated approach to values in landscapes" (2008). To help address the problem of fragmented understandings of landscape value, and to consider the contribution of landscape to cultural sustainability, Stephenson combines narratives, (relationships) ecological and social history (practices) and features of the landscape (Forms) in her development of a 'Cultural Values Model' with the aim of understating the potential range of values that might be contained (and ignored by policy makers) in a given landscape.

I selected my interviewees for various reasons. Members of the Heber Wild Horse Collaborative Working Group, whom I directly observed during meetings, were selected because they were obviously central to the controversy. I followed up by contacting land management agencies involved in the wild horse management policy process (USFS, AZ Game and Fish, BLM) as well as leaders currently opposing agency management of wild horses and spokespersons for organizations involved in the wild horse management policy process in similar cases – namely, the Salt River Wild Horse Management Group (SRWHMG). This non-government wild horse welfare organization has been managing the state protected wild horses that roam along the Lower Salt River in the Tonto National forest, just minutes away from Scottsdale, Arizona, since 2016. The flexibility and collaborative endeavors available for the management of free-roaming horses, without the constraints of federal policies,

provides for an interesting and noteworthy contrast to the federally protected Heber wild horses. Such analysis also provides insights into the conflicts between wild horse advocate groups supporting unique concerns and degrees of "Wildness" in respective wild horse herds.

My involvement with the SRWHMG over the past five years has been varied and has encompassed multiple forms of immersion into their endeavors to manage the Salt River Wild Horses. As an instructor at Arizona State University, the coordinated field trips for my equine science students allowed for further undergraduate research into wild horse behavior, fertility control and nutrition. Kayaking trips with the president of the group allowed me to observe the behavioral differences in the Pinyon-Juniper forest dwelling Heber Horses from the riparian dwelling equids of the Salt River. Not only are the Salt River Wild Horses being managed for fertility control through the use of gun-darting with Porcine Zona Pallucida (PZP), but they also routinely receive supplemental feed in addition to emergency medical care. Precise records are kept for each horse, including the band they are associated with and exact dates of darting. I have also spent several days on "ride-alongs" with the SRWHMG wild Horse liaison for the Arizona Department of Agriculture (AZDA) and Tonto National Forest in order to further explore the concerns involved in providing for public safety in the highly recreated area where the Salt River Wild horses roam.

Additional ride-alongs and field trips took place in the HWHT with local ranchers in the area. Further contacts and interviewees came to my attention through comments on Facebook or letters written to the editors of local newspapers. My intention was to ensure that all aspects of diverse opinions, pro and con, were represented. Archives from the USFS, horse advocate and Livestock groups as well as the ASU Heber Horse Collaborative, provided numerous sources of data including

Facebook comments, minutes from the Heber Working group meetings, and articles dating back to the early 2000's. My aim was to examine the issue from the multiple standpoints of those who were involved or affected by wild horse management at the ground level in an attempt to understand their own lived experiences.

My approach for setting up unstructured interviews entailed contacting key actors as dictated by the Human Subjects Review Board at Arizona State University. The protocol for my approach included: the delivery of a letter or email to potential interviewees outlining my research project, an invitation to participate by face-to-face or phone interview, a field study guide with the questions I wanted to ask, and, if they so desired, a promise of confidentiality (See Appendix E, F, G, and H for protocol and interview questions). While some interviewees might have been initially reserved, I found, after an initial development of trust, that most stakeholders were quite open to conversation.

In order to gain an understanding of stakeholder trust within the Heber Wild Horse Territory working group, I further incorporated stakeholder interpretation of the ecological science (as applied to habitat management) and animal welfare science (as applied to equid welfare). To improve current knowledge and provide further insight into the Heber Wild Horse Management controversy, I explore the degree to which stakeholders draw on different understandings and interpretations of the natural history, animal behavior and ecology relevant to the Heber wild horse case. My aim is to analyze how different groups utilize these understandings in their various narratives. From these narratives, specific stakeholder attitudes toward horse policy and management can be revealed, including whether or not a sense of trust in management has been achieved. For example, did Stakeholders perceive that their various interpretations were taken into account? Was their voice heard? Knowledge of how these different ethical and empirical commitments play out in a

complex case of wildlife management and conservation will contribute to a range of discussions in applied environmental ethics and the human dimensions of wildlife management.

To address my specific research questions, my mixed-methods ethnographic approach includes:

- Analysis of history and philosophy surrounding U.S wildlife management and free-roaming horses in North America: Accomplished through an extensive multi-disciplinary literature review and document analysis.
- Assessment of Working Group/stakeholder values and attitudes – with particular attention to the language used to describe these ideas – and their interpretation of ecological and animal welfare science: Accomplished through a qualitative analysis of semi-structured interviews of stakeholders involved in the Heber Wild Horse Territory Case study. Stakeholders self-identified as:
 - Cattle Ranchers/ livestock permittees: (2)
 - Local Government (1)
 - Nature Conservationists/ wildlife specialists; (2)
 - Range and Wildlife Specialists: (2)
 - Veterinarian /Animal Welfare Science – (2)
 - Wild Horse advocates-Equine rescue, recreation or horse photography: (3)
- Evaluation of Effectiveness and Trust building in Heber Wild Horse Territory Collaborative: Accomplished through participant /observation of the Heber Wild Horse Territory working Group, detailed notetaking and follow-up interviews upon completion of the HWHT Working groups activities.

- On-site equid behavior and habitat analysis of Arizona's alpine dwelling federally protected HWHT horse bands as well as Arizona's state protected desert dwelling Salt River wild horses and their habitat: Accomplished through several ride-alongs with local ranchers in Heber, numerous field trips with department of Agriculture's wild horse liaison for Salt River Horses, observations and PZP darting with Salt River Wild horse management group.

These methods allow me to examine the long-running dispute over wild horse management in order to determine how this debate might be shaped by the mixture of interpretations of the science behind the ecology and management of free-roaming horse management and normative (ethical) beliefs/claims of different stakeholders. An understanding of how these different ethical and empirical commitments play out in a complex case of wildlife management and conservation will contribute to a range of discussions in applied environmental ethics and the human dimensions of wildlife management.

The Trail Ahead

Conservation biology is currently witnessing a significant reassessment of the science and management practices surrounding what is termed nature conservation (Jepson, 2022). The backlash voiced by the rising compassionate conservation movement and other members of the public regarding the perceived mismanagement of alleged 'overabundant', 'non-native' or 'feral' species, (i.e., the free roaming horses in North America) has resulted in a demand for the re-examination of appropriate strategies and available tools for wildlife management that traditional conservation biology, in their view, cannot currently deliver (Wallach, Bekoff, Batavia, et al., 2018). Furthermore, since the mid-1990s, forward thinking

conservation biologists (together with animal welfarists/activists) have called for a move beyond the defensive on biodiversity protection (as seen in traditional restoration efforts where the desired goal resembles some past ecosystem) towards a proactive agenda of rewilding (which draws on the science of restoration but is more relaxed about the creation of novel ecosystems) in order to generate value for people and nature. This approach is supported by many in the rising field of compassionate conservation as well as many horse advocates (Jepson, 2022).

The public's interpretation of the effects of various wildlife interactions depends largely on their value-orientations and is illustrated in the diverse narratives they utilize to describe their understanding of nature and wildlife (Chase, 2013). Discourse and collaborative activity between the professional wildlife manager and community stakeholders can lead to improved recognition of human-wildlife interpretations and interactions as well as enhance awareness of the wildlife-related impacts that are of primary management concern in the community. Beyond differences in the understanding of nature, it is crucial in such collaborations to investigate cultural biases that exist between various stakeholders that could potentially lead to an inability to collaborate or establish trust. The aim is for community-based collaborative decision making to effectively result in the specification of management procedures that are acceptable to stakeholder's involved (Decker & Chase, 1997).

The structure of my thesis is driven by the combined, multi-disciplinary nature of my research questions. Through an analysis of various stakeholder's interpretation of the science used to describe wild horses and their role on public rangeland, as well as their described "narratives" or key means through which they organize and make sense of reality and engage in reasoned argument, I hope to investigate agencies' and the public's justification for their support or opposition

towards current land management policy and the science behind existing wildlife management strategies. By and large, the term 'narrative' refers to the way a story is told, but in the policy sciences, it is used in a more structured sense to refer to building blocks or components that are combined to create architectures to tell stories about the condition or current understanding of the world, the consequences of that condition, and finally, what should be done to enhance a desired outcome. Insight into these dynamics and how to affect social, ecological and political changes will require an interdisciplinary effort from various fields including law, politics, history, philosophy, ethics, economics, ecology, animal science and psychology.

My thesis revolves around the two shifting trends in the philosophy of conservation biology: 1) The interpretation or moral concerns for animal welfare and animal rights; and 2) Goals for the upgrading of ecosystems and the conservation of nature through innovative rewilding efforts. With these insights, how can the benchmarks and justifications for various wild horse management approaches be determined? How can policy move forward in efforts to incorporate various interpretations of our understanding of nature? And finally, how can knowledge gained from the federally protected horses in the Heber case study and state protected Salt River Wild Horses assist in the development of an innovative approach for wild horse management on all public lands in the U.S. as we move into the 21st century?

In order to establish an understanding of the changing North American attitudes (value-orientation) and the transformation of the horse's role on the landscape, I begin Chapter Two with a brief discussion that focusses on the narratives and bio-social encounters of humans and horses in the American West from early colonization through the "Taming of the West" and the disappearance of the so-called "frontier." This chapter further explores the mythology surrounding

both the “cowboy” and the wild mustang and explains how America’s independent spirit is tied to the iconic symbol of the wild horse while at the same time, explains why various sectors of the public view the same animal as a pest. Additionally, Chapter Two describes how the wild mustang’s symbol of freedom persevered and would become instrumental in the public’s support for the 1971 Wild Free Roaming Horse and Burro Act. Chapter Two further highlights the indigenous voices that have been traditionally misrepresented in their relationship to the wild horse of North America and connects this to their cultural heritage.

Chapter Three takes these disparate values and views of the mustang (and wildlife in general) and concentrates on the discourse surrounding the management of wild horses through a philosophy supported by compassionate conservation (with a focus on a “do no harm” approach towards managing wildlife akin to an animal rights approach or welfare concerns for captive species), and that supported by current U.S. policy which emphasizes a holistic concern for the ecosystem and focusses on populations of organisms and enhancement of native species biodiversity with an end goal to restore nature to a desired baseline in history. Chapter Three further explores the human connection to nature and explains why traditional values that have conventionally focused on domination over wildlife are giving way to mutualistic values that regard wildlife as fellow beings in a common social community. Anthropomorphism has been shown to be a key factor in stimulating both wildlife value shift and changing attitudes toward wildlife management in modernized countries. Attribution of human traits, emotions, characteristics or intentions to non-human entities, leads to consideration of individual animals and the avoidance of lethal control techniques – such as that proposed by supporters of the philosophy embedded within compassionate conservation.

Chapter Four applies the science and the art of wild horse management to the recognized “Five Freedoms” utilized by animal science practitioners to assess animal welfare in captive species and exposes the visible and invisible harms (unintended consequences) associated with a holistic ecosystem approach as well as one that addresses animal rights/animal welfare concerns.

The continued belief over the past several decades that ‘non-native’ species have driven highly valued ‘native’ species to extinction and have contaminated ‘natural’ environments has contributed to the creation of a prevalent bias against ‘non-natural’, ‘alien’ or ‘feral’ species that has been embraced by certain members of the public, conservationists, land managers and policymakers. Chapter Five highlights the confusion and debate over the importance of the conservation of ‘native’ or ‘non-native’ species and the desire for a new approach in conservation biology that can facilitate ecosystem services in novel ecosystems. It dives deeper into the philosophy surrounding rewilding, its many definitions and applications, and how a framework for rewilding wild horses might be applied in North America.

Chapter Six examines horse protection policy and efforts to balance public desire with controversial wildlife issues as the ‘Old West’ transforms into the ‘New.’ It further investigates the effect of conservation policies (e.g., Endangered Species Act, NEPA) on mustang populations as well as policy changes needed to ensure public support.

Chapter Seven examines the Heber Horse conflict in an effort to contribute to current research involving Collaborative management in natural resource management. Specifically, the aim is to determine how trust is established and maintained during the collaborative process to achieve agreement, and how trust might be damaged or severed. A case study approach can offer new insights into the functions and limitations of the collaborative management approach; a practice that

is currently perceived as central to federal agency governance. An understanding of how the Heber Territory Working group's efforts unfolded can further add to the empirical knowledge on recent theoretical developments about trust in natural resource management.

Chapter Eight reveals' lessons learned and efforts moving forward.

CHAPTER TWO

DANCES WITH HORSES

For that pony had got tangled up in the cowboy's heartstrings a heap more than that cowboy wanted to let on, even to himself. He couldn't get away from how he missed him. (James, 1926, p. 188)

Legends of the Good, the Bad, and the Ugly

Anthropologists have historically attempted to understand the role of animals and their cultural ties to humans in terms of their symbolic relationships. Typically, this cultural connection is viewed as a social, geographical link tied to the animal's function within a particular society and specific location. Exploring what a mustang means in the 21st century, however, no longer requires physical proximity or closeness with the animal. With advancements in science and technology, symbols are now highly influenced by Images created through media (internet, photographs, cinema, television, films, and computer-generated pictures, literature). Although the representation may seem straightforward, the interpretation depends entirely on the viewer (NRC, 2013). While the image of a well-muscled, sleek horse running with mane flying free across the high plateaus evokes a sense of wildness and freedom, a starving, scraggly jug-headed, flea-bitten horse in a dusty corral might evoke the perception of a prisoner, or that of a ward of the state.

Undeniably, while wild horses (and their iconic images) may be an inspiration to many, there are others, especially those who rely on America's western federal lands for their livelihood, whose lives are not always enriched by their presence. Viewed as an invasive species whose increasing numbers compete with livestock and other wildlife for valuable forage, these wild horses become an unwelcome visitor on the landscape; a feral animal that is anything but "an integral part of the natural system" (as the 1971 Free-roaming Horse and Burro Act declares) and, in their opinion, one that is not vital to the management of healthy ecosystems. Cattle

growers, environmental groups and federal agencies argue that increasing numbers of wild horse populations is the primary factor contributing to degradation of America's western rangelands. To the rancher, the unmanaged free-roaming horse is destroying any chance for successful cattle operations (Bhattacharyya, 2012). To the environmentalist, they are encroaching on habitat that should be reserved for native species (NRC, 2013; Center for Biological Diversity, 2020; WFRHBA, 1971). Some ranchers resent the intrusion of the federal government in wild horse matters that were once left to the ranching community and regional public land agencies. The aesthetic "wild horse lovers" are regarded by some in the livestock management faction as misinformed urbanites who are unrealistic and out of touch with the pragmatic challenges of ranching (NRC, 2013). This feeling of entitlement toward management of free-roaming horses can partially be attributed to the historical tie and centuries of rangeland management on the part of ranchers (see Chapter Six). Some within the ranching community, in fact, might suggest that this generational passing down of firsthand knowledge of riding, roping and common sense surrounding the health and nutrition of domestic horses should be interpreted as a form of Traditional Ecological Knowledge (TEK).

While the traditional knowledge of domestic horses is vital in understanding equid welfare, it is the *wild* mustang that has become aligned with many of the same symbolic representations embedded within the mythic representation of the "Old West's" cowboy of the late 19th century. As lore has it, the wild mustang possesses a mythical sense of wildness that can never be caught or tamed. The tales describing the legendary, inaccessible white stallion, always eluding capture and rearing in defiance on the horizon, emerged from groups of explorers in the early nineteenth century and expressed the era's hunger to explore and conquer (Dalke, 2010). Herman Melville, the author of *Moby Dick*, was also lured by the independence and

rebelliousness symbolized by the legend of the beast that could not be tamed. The tales changed with time as the mustang finally succumbed to man, however it was only a truly *honorable* cowboy that was awarded his companionship and loyalty (as typified in the Lone Ranger and his horse "Silver") (Berkes, 1999; Bhattacharyya, 2012). Characterized as the master of the land and of animals, the idealized cowboy took to heart God's command that man holds dominion over all animals, particularly horses, as they defined his mobile nature and restlessness (Dalke, 2011; Bhattacharyya, 2012) The myth of the righteous cowboy who, among other heroic qualities, could capture and control the wild stallion, was transpired through countless dime novels, pulp fiction, stage shows, and eventually Hollywood movies. Primarily based on the stories by western adventure writer Zane Grey (*Wild Horse Mesa*, 1928, and over 90 others) and hugely influenced by the character development of American novelist Owen Wister (*The Virginian*, 1902), the era of the classic westerns lasting from the 1880s through the early 1960s dramatized the super-heroes that managed the Wild West before it was civilized. One envisions Gary Cooper with his six-gun shooter in the film *The Virginian* (V. Fleming, 1929) or John Wayne slinging his saddle over his shoulder in *Stagecoach* (Ford, 1939). The iconic cowboy image along with the wild horse, became ingrained into the myth of America and the Old West and was perpetually linked to a set of ideals such as quiet toughness, steadfast loyalty, plainspoken common sense and an insistence on independence. The ranching community is proud to identify with such "American" ideals regardless of the fact that the Old West, filled with its cowboy heroes and untamable beasts, was just a myth fabricated in the minds of eastern, white, male writers (Donahue, 2005).

Contrasting with the appealing figure of the heroic cowboy as exemplified in *The Virginian*, the true-life 'cowpuncher' had an abhorrent lifestyle that revolved

around indulgence and tough, wearisome work with little pay and less security. As noted by Stephen McVeigh in *The American Western*, "cowboys were generally considered less than wholesome figures, at best-foul-mouthed, drunken delinquents, at worst, criminals capable of any amount of violent excess" (2007, p 33). The existence of the authentic cowboy was astonishingly short in the American West, extending from approximately the end of the Civil War to the early 1880's, coinciding with the end of long-distance cattle drives in the northern portions of the U.S. And yet the myth, and the cowboy's role in defining such American ideals as "Manifest Destiny" promoted by Fredrick Turner's Frontier Thesis in 1893 (discussed further in Chapter Six) remained popular for nearly a century (A.O. Turner, n.d.).

Perhaps the newspaper journalist in John Ford's classic western *The Man who shot Liberty Valance* (1962) said it best upon learning that the idolized governor he was interviewing was not the hero the public had made him out to be. When the Governor asks why the *true* story about his past will not be printed, the journalist replies: "This is the West, sir. When the legend becomes fact... print the legend." That single quote summarizes the 'Old West's' primary theme and also encapsulates the varying interpretations of the science currently surrounding management of the mustang today. "Truth is only meaningful as long as it agrees with what the public wants to hear. When heroes don't exist, it is necessary to invent them" (Berardinelli, n.d.).

While the mythical hero, romanticized in the untamable American mustang, continues to be applauded by wild horse advocates and lives on today in the Wild Free-Roaming Horses and Burros Act, his trusty sidekick, the "Lone Ranger" has not fared as well. The public views cinema as an extension and validation of their wants and desires as well as a way to characterize their relationship to those who wield power, either socially or economically (McGee 2012). The dwindling popularity of

"traditional" westerns in mid-20th century America is evidenced in the public's changing attitudes towards the methods used in the taming of the old west. It also coincided with the environmental movement that was taking hold as well as a rise in concern for equal rights-in both humans and non-humans. The authors and film makers of the Classic Western took notice of these changing times and began to criticize their archetypal protagonist. The major concern was for the positioning of the Cowboy as a hegemonic figure, and what that entailed for women and minorities. Not surprisingly, the 1950's and turbulent 60s ushered in a shadier side to the character development of the honorable, lone cowboy with Shane, the mysterious, soft-spoken gunfighter played by Alan Ladd, (1953) or the "Man with No Name", portrayed by Clint Eastwood in the Sergio Leone revisionist westerns (1964-1966). This new revisionist approach to the western genre put the spotlight not on the frontier mythos and rugged individualism so near and dear to American identities, but on the uniquely American relationships with capitalism and class. These new westerns depicted a morally questionable world where the heroes and villains oftentimes resembled each other more closely than had previously been shown. The concept of right and wrong became blurred in a world where actions could no longer be said to be good or bad (McGee 2012).

The myth of the mustang that authors like Zane Grey popularized were among the many literary contributions to the iconic mustang image and the passion surrounding the passage of the 1971 Wild Free-Roaming Horses and Burros Act. Ironically, the genuine deep personal connection that the cowboy shared with the wild mustang (detailed by cowboy and author/artist Will James in his 1926 *Smoky the Cow horse*) would be transformed in the following decades from trusted companion and loyal servant to an unwanted trespasser on the range (James, 1926). While *Smoky* focused on the individual relationship and bond between wild horse

and humans and hinted at welfare concerns, narratives that began to examine affective states in animals by anthropomorphizing their thoughts and actions – as exemplified in Anna Sewell’s *Black Beauty* (1877) – brought concern for the general welfare of domestic horses into the limelight. The first English novel voiced from a non-human animal’s perspective, Sewell’s aim was to induce kindness, sympathy, and an understanding treatment of horses. In many respects the book can be read as a guide to horse husbandry, stable management, and humane training practices for colts. It is deemed to have had a huge effect on reducing cruelty, such as the banning of “check reins” in England.

Although concerns for wild horses were kindled by the Old West’s myth of the unattainable mustang and the anthropomorphic views presented by Sewell, it would be nearly a century before welfare of wild horses would be brought to the forefront. In order for society’s desire for compassion and humane treatment of domestic horses to be echoed in legislative efforts surrounding wild horse policy, *Equus ferus caballus*, had to first become established as a legitimate contender for the rights to roam the American landscape. And yet having legitimate rights implies there is a logical niche for them to fill within the ecosystem. What role might this be?

The Evolution of an Ecosystem Engineer

Although many groups within the general public might not agree, paleontologists consider *Equus* species a part of North America 's natural ecology due to their evolution on this continent during the Eocene Epoch over 58 million years ago (Flores, 2016; Philipps, 2017). The evolutionary line leading from this first “Dawn Horse” (*Eohippus* or *hyracotherium*) to the direct ancestors of the modern horse (*Equus caballus*) exhibited remarkable adaptations to the rapidly changing climate and associated habitat conditions that were occurring on the North American continent. Such adaptations included an increase in body size, reduction in the

number of hooves, loss of the footpads, lengthening of the legs, and fusion of the independent bones of the lower legs. These characteristics enhanced speed and provided equids with the ability to evade such Pleistocene predators as the American Cheetah and the Sabre Tooth Cat. Elongation of the muzzle allowed equids to graze the tall grass prairies and detect predators on the horizon. An increase in the size and complexity of the brain enhanced social behavior, consequently offering improved protection for equid herds. Development of crested, high-crowned teeth permitted early equids with the ability for the mastication of cellulose and silica embedded within grass cell walls (Flores, 2016; Forrest, 2016). Although the organs of digestion are not preserved in the fossil record, adaptations in the digestive tract (elongated large intestine with highly developed cecum) were occurring as well. These new ponylike beings that emerged 2.5-5 million years ago, flourished as social creatures, living in bands. Their adaptations left them well suited for life on the grasslands that were rapidly dominating the area due to massive upheavals on the North American Continent and disturbances in topography during the Miocene.

Many avid supporters for the use of equids as ecosystem engineers (e.g., in Pleistocene rewilding or in efforts to decrease fuel loads for wildfires) profess that horses contributed to grassland ecosystems by creating ecospace through seed dispersal passed in feces, and promoted the emergence of new grass growth through grazing and opening up of areas through trampling of trees in order for grasslands to flourish. Supporters of equid rewilding believe this valuable role should be re-established in wild horse management efforts worldwide (see Chapter Five).

The Demise and Return of a Native

The wild horse management debate in America is heavily embedded within the issue of whether the wild mustangs should be seen as a species that doesn't really belong on the North American continent, or alternatively, viewed as a species

that has been reintroduced to its natural environment. DNA evidence drawn from cored permafrost sediments extracted from the Klondike region of central Yukon in 2021 shows that both the woolly mammoth and North American horse persisted on the North American continent until as recently as 5,000 years ago, bringing them into the mid-Holocene, the interval beginning roughly 11,000 years ago and that we live in today (Kirkpatrick, 2010). These insights support animal welfare groups' voiced concerns that wild horses deserve more public land to roam and increased rights, including "native" status with protected legislation, and management objectives associated with other native species.

Further evidence published in the *Journal of Molecular Ecology* (2021) has shown that horses freely migrated back and forth across the Bering strait into Eurasia during two specific time periods in the mid and late Pleistocene as they continued to evolve into the familiar species we know today. The usual view in the past was that horses differentiated into separate species as soon as they were in Asia, however, these results show there was continuity between the populations. Horses were able to interbreed freely as evidenced by the genomes of fossils from either side of the divide. This finding indicates that North American and Eurasian horses were basically the same species. Because this study illustrates that North American horses mixed with those from Eurasia almost until they were exterminated in North America, it's easier to explain their existence as the reintroduction of a native species rather than regarding horses as an invasive species (Kjørstad, 2021).

When the Clovis cultures first encountered these early horses upon their arrival in North America some 13-20,000 years ago, they confronted a species that had evolved to outrun Pleistocene predators. Their predator-avoidance skills against newly arrived humans however, might have proved to be ineffective and thus a factor, along with climate change, a meteor strike or disease, that contributed to

their demise. The disappearance of horses was not an isolated event, as the North American continent also suffered the loss of 24 of the 39 genera of megafauna that had once roamed its grasslands and forests including the short-faced bear, American lion, saber-toothed cat, mastodons, giant sloth, camel and rhinoceros (Flores, 2016). Pleistocene overkill, the term for this notion that humans overhunted megafauna near the end of the Pleistocene in the Americas, Australia, and beyond, is used as prime example of the impact that humans can have on the planet. As Archeologists Lisa Nagaoka and colleagues point out in "The overkill model and its impact on environmental research" (2018), the importance of the overkill model for explaining human-environment interactions and anthropogenic impacts (and, consequently, our duty to re-wild areas with representatives of these species) differs widely across disciplines. There is considerable debate, particularly within archeology, about the extent to which humans may have actually been the cause of these extinctions. This perception drastically contrasts with the view held by many ecologists, where the Overkill Hypothesis has received far more media attention through books like *The Sixth Extinction* and highly publicized events concerning de-extinction. The view that humans were responsible for the demise of megafauna is hard to change, due, in part to the fact that we have witnessed the influence of human activity on biodiversity today. That humans started this pattern in the Ice Age thus becomes a political position, according to Nagaoka. To question this line of thinking is sometimes treated as if the critic were denying the modern extinction crisis.

Questions surrounding the human induced regional population loss of wild horses factor highly into the debate surrounding our moral concern to provide for the horses and a concern that the philosophy of conservation biology seeks to uphold: prevention of extinction of species. If humans caused the demise of *Equus caballus*, is it not our *duty*, then, to return them to their original home? Perhaps guilt over

humanity's perceived appetite for destruction is driving the case for ecological penance. At the same time, as environmental philosopher Ben Minteer notes, it could be said that early humans were distinct enough from humans today that their choices are not our responsibility. Whether or not humans actually sparked a global extinction crisis in the Pleistocene has become almost irrelevant in conservation communication because of the argument's rhetorical value. When overkill is used as a cautionary tale and an instrument to rally support for environmentalism, it portrays humans as a destructive species, Nagaoka and colleagues write, apparently not through what we choose to do but because it's inherent to our nature. That some researchers default to treating human actions as inherently destructive indicates a core belief that humans are beyond nature and that nature, thus, needs to be protected (Callicott et al., 1999).

Regardless of the actual cause of the demise of *Equus caballus* in North America during the Pleistocene, their reintroduction by Spanish explorers in the late 15th century was followed by the rapid reversion of fugitive horses to a wild state. These wild horses flourished on the plains of their ancestors. By the time of European exploration in the 1800s, vast herds of wild horses roamed the Great Plains; virtually altering the dynamics and culture of everything and everyone they encountered (Flores, 2016).

Or perhaps, as equine genomics researcher and indigenous Lakota scholar, Yvette Running Horse Collin has professed, the horses *never left* North America.

An Alternative Narrative

While the Euro-American version of history credits Spanish conquistadors and other early European explorers with reintroducing the horse to the Americas and to Indigenous Peoples, many Native Nations state that "they always had the horse" and

that they had well established horse cultures long before the arrival of the Spanish.

According to Collin's dissertation:

To date, "history" has been written by Western academia to reflect a Eurocentric and colonial paradigm. The traditional knowledge (TK) of the Indigenous Peoples of the Americas, and any information that is contrary to the accepted Western academic view, has been generally disregarded, purposefully excluded, or reconfigured to fit the accepted academic paradigm. Although mainstream academia and Western science have not given this Native TK credence to date, (my) research project shows that there is no reason – scientific or otherwise – that this traditional Native claim should not be considered true. The results of (my) thesis conclude that the Indigenous horse of the Americas survived the "Ice Age" and the original Peoples of these continents had a relationship with them from Pleistocene times to the time of "First-Contact." (Collin, 2017, p. iii)

In her research, Collin drew heavily from interviews with American Indian study participants from seven different nations. Every indigenous community interviewed reported having horses prior to European arrival, and each community had a traditional creation story explaining the sacred place of the horse within their societies. It's something Collin did not expect.

If you lay out a map, these nations are all over the place. These communities do not speak the same language, share the same culture or the same geographical areas. Yet, their oral histories were all completely aligned. They each shared when the horse was gifted to them by the Creator, that the acquisition was spiritual in nature and that they did not receive the horse from the Europeans. (Collin quoted in Johnston, 2019)

Collin put forward as a basis of argument that the discrepancy between the Spanish reintroduction theory and the narrative reflected in her research has to do with a cultural bias that is still present within Western academia. Collin theorizes that because horses were a symbol of status and civilization in Spain during that time, and because conquerors needed to illustrate the Native people as savage and uncivilized to justify their conquest to the Queen of Spain, the truth about the relationship between Native peoples and the horse was purposefully distorted (Johnston, 2019).

When Columbus came, the Spanish had just finished an 800-year war with Muslims, Queen Isabella gathered every horse in the vicinity and those horses

became part of her army. With that horse power, she was able to conquer the Muslims. So, the horse was incredibly valuable. You'll find paintings of her on these beautiful palominos. The horse was very much connected with nobility, power and the concept of 'civilization' for these people. (Johnston, 2019)

Through an intercultural translation lens, Collin proposes that the history of the association between the Indigenous peoples of the Americas and their horses was covered up and rewritten. Collin's research, however, has not come without criticism. Archeologist Carl Feagans reports what he interprets as numerous fallacies in her argument, including claims that she relies on sources that are considered "pseudoscientific, pseudo archaeological, and pseudohistoric" (2019). Feagans goes on to say:

Collin's dissertation cites Ancient Origins, Richard Thornton, and Dell Dowdell, and each of these sources variously or indirectly promote ideas about Native Americans which can be considered racist. Dowdell, the creator of nephicode.com, actively promotes the notion that Native Americans are the descendants of white Mormons and he believes the Earth is only as old as one of the cave paintings mentioned earlier in this article. Conspiracy theorist Richard Thornton publishes pseudo archaeological claims of Maya settlements in Georgia. And Ancient Origins is a website that traffics in all manner of fake, fraudulent, and fantastic archaeological news, books, and media for profit. Authors they promote range from racists to general conspiracy theorists. (2019)

Regardless of where one might stand on the interpretation of native status on *Equus caballus*, the key issue is the importance and recognition of the value of the horse to various societies (e.g., in terms of wealth, power, or prestige) and the recognition that their presence on the landscape holds disparate, profound meaning for all cultures. Furthermore, how this meaning is interpreted can be revealed through the use of a set of human constructed terms.

The Wild and Feral Debate

The urgent need for clarification of the numerous terms used to describe free-roaming horses (e.g., "wild", "feral" "domestic" "invasive" "native/non-native") is ongoing and has led to confusion and conflict in management efforts.⁴⁶ Consequently, there is pressing need for the justification of the continued use of such terms.

Although these labels are human constructs that apply to the same animal (*Equus caballus*), their usage has direct legal, policy and management implications for free-roaming horses (see Appendix A). The term “feral” (escaped domesticated animal) implies an unauthorized occupation of the ‘natural’ landscape. “Wild” (free from previous human interference and living an autonomous life) on the other hand might signify a “hands off” approach to management. “Native” (living in a geographic area in which an organism evolved) secures protected status for an animal, or at least grants permission to occupy the terrain. These metaphors can be misleading, divide the public on issues, bias our scientific efforts, interfere with interpretation of scientific data and lead to inabilities to manage effectively (see Chapter Three) (Bhattacharyya, 2012).

Regardless of the narrative behind the length of time horses were absent from the North American landscape (or whether or not various narratives and artifacts support their disappearance at all), classifying the horse through its relationship to humans (e.g., the lens of “domestic” verses “wild”) provides no assistance in our ability to assess habitat conditions. Furthermore, a biologist/geneticist’s interpretation of domestication can differ from the general public’s understanding. To the geneticist, “domestic” implies previous manipulation of the organisms’ genome by humans. To the general public, “domestic” suggests an animal that must be cared for by humans. Does previous domestication of a species have an effect on the landscape or the role the organism plays in the ecosystem? Can a domestic species ever be “wild” again? In terms of behavior, advocates of wild horses have claimed they revert to their wild behavior in just two generations.

Genetically speaking, the Mongolian Przewalski Horse was once considered the last surviving “wild” horse, and all others classified as feral (previously domesticated) (Kirkpatrick & Fazio, 2020). Great efforts were made by conservation

biologists to preserve the genome and “rewild” its native habitat in Mongolia. Recent DNA evidence, however, has since demonstrated that Przewalski’s horse descended from one of the earliest known groups of the domesticated horse, the Botai horse, found in northern Kazakhstan 5,500 years ago.⁴⁸ There are, therefore, no truly “wild” horses left in existence. With this new evidence, these treasured icons, preserved as the last living “wild” horses and re-wilded in areas of Mongolia, would now be regarded as a feral animal, as some groups consider the American mustang.

To further add to the semantic confusion, the legal term “wild horse” is *only* used by the BLM, the USFS, the National Park Service and U.S. Fish and Wildlife Service to indicate those horses with legal rights to an assigned federally protected Herd Management Areas, Wild Horse Territories or National Wildlife Refuges (WFRHBA, 1971; USFS, n.d.b; USFS, n.d.a; BLM, n.d.a). Protected horses in these areas must not possess a rancher’s brand and must have descended from horses living within the area when the law that protected them was enacted. In addition, those horses (and burros) removed from the range and now living in captivity within short- or long-term holding facilities are also considered “wild.” Horses found on public land outside these areas are classified as “un-authorized livestock” by federal agencies and have historically been removed (BLM, n.d.a; U.S. Forest Service, personal interview, 2017). The legal mandate for these agencies is to protect native wildlife and prevent non-native species from causing perceived harmful effects on the general ecology of the land.

The rationale for examining the “wildness” or “nativeness” of horses is significant in the understanding of the diversity of ways in which people can view the same situation depending on their underlying value orientations and economic interests. A great many current management approaches (i.e., management of national forests and rangelands for native species and removal of non-natives) might

be compromised with an acceptance of the idea that wild horses are, in fact, native wildlife. Regardless of the length of absence (researchers estimate between 8-12,000 years) wild horse advocates assert that horses have lived and co-evolved on North American landscapes for hundreds of years after their re-introduction by the Spanish and are fully capable of remaining “wild” on the landscape (Flores, 2016). Because domestic horses revert to their wild behavior after just one generation, the “domestic/wild” debate, they say, becomes irrelevant (Netherlands [Salt River Wild Horse Management], personal interview, 2019). To many in this group, a “domestic” mare wandering into a wild horse herd management area (and classified as “unauthorized livestock” by federal agencies) could give birth to a “wild” foal that would be protected under the Free Roaming Horses and Burros Act of 1971. This example illustrates how genetic and geographical origins of the horses would not be barriers for certain groups in order to classify them as “wild”.

In addition to a concern for nativeness and wildness, many horse advocate groups opine that the genetic lineage of the descendants of these re-introduced “Colonial Spanish horses” are endangered and should be preserved (see Chapter Six). The ancestral type from which the original Spanish Colonial horses descended was a product of the horse populations that blended the Iberian horse or “Andalusian” and the North African Barb. The status of the Colonial Spanish horse is considered threatened overall with seven individual strains specifically identified which are registered by several entities. It is important to note that the Colonial Spanish horse, a general classification, is not synonymous with the Spanish Mustang, the name given to a specific standardized breed derived from the first concerted effort of conservationists in the United States to preserve horses of Colonial Spanish Type. Colonial Spanish horse blood markers have been found in some mustang populations as well as various groups of ranch-bred, mission, and Native American

horses, mostly among those in private ownership (Ovchinnikov et al., 2018; Downer, 2014). Even though most of these animals share a genetic lineage with other escaped horses from homesteaders, cattle operations, cavalry and mining efforts (e.g., the American Quarter horse, the American thoroughbred, as well as other draft breeds), horse advocates site this endangered lineage as further evidence of the need for suitable habitat for free-roaming horses (Unbranded Wild Horse Group, private Facebook page, 2014).

Despite their genetics and their evolutionary lineage, those mustangs that were able to survive on arid western rangelands in harsh conditions continued to adapt and cling to those 'hearty' genes needed for survival. Proponents of rewilding agree: if any species were able to successfully re-wild the American West and act as an efficient ecosystem engineer, it would be *Equid caballus*. As ecologist and environmental historian Dan Flores professes: "It is fascinating to imagine a Great Plains ecology that once again replicated the Pleistocene (or Africa with its wildebeests and zebras) by integrating bands of wild horses in amongst the bison, herds of pronghorns and deer and elk, wolves and cougars and coyotes and grizzlies" (Flores, 2016, p. 71). Horses are thought to have comprised as much as 25 percent of the biomass of grazing animals in the Pleistocene. How large a component of the ecosystem horses became in the eighteenth and nineteenth centuries is difficult to assess as we have little other than anecdotal descriptions to go on. No one has been able to assess historic-era horse numbers in the same way we have worked out bison estimates, however, many horse advocates cite the writer J. Frank Dobie, who speculated that by 1800, some 120 years after the great Pueblo uprising against Spanish oppression, there were at least 2 million wild horses in the West and that half of them were located on the prairies south of the Arkansas River, primarily in Texas (Dobie, 1934). Although most horse advocates are urban dwellers who have

never seen wild horses or even visited the west, they desire to know that wild horses are out there roaming wild and free. They would argue that a sanctuary that replicates portions of the great plains, would be fitting for these mustangs, a tiny slice of the “American Serengeti” so to speak (Flores, 2016; Philipps, 2017).

Organizations and agencies opposing horse re-wilding and/or utilizing more land for wild horses (e.g., The Wildlife Society, government land management agencies) view the horse that returned to North America as a much different animal (they were larger in size at about 1,000 lbs. verses the roughly 700 lbs. Pleistocene horse, for example) and the landscape 11,000 years ago was much different from today (The Wildlife Society, 2020). Without the presence of the giant Pleistocene predators *Equus* species evolved alongside, or other aggressive population control methods, wild horse numbers will continue to escalate. Furthermore, opponents feel that free-roaming horses descended from feral *European* stock and cannot be considered native because the complex of animals and vegetation has changed since horses were extirpated on the North American continent (The Wildlife Society, 2020).

In the view of wild horse opponents, these “exotic” pests jeopardize habitat health and viability of native wildlife and domestic populations. “Feral” horses, or any grazing ungulate not aggressively managed for that matter, will quickly destroy rangeland especially in a time of changing climate and increased drought (Beever & Brussard, 2004; Beever & Herrick, 2006). In mid-October of 2019, William Perry Pendley, the acting director of the BLM, warned environmental journalists at a conference in Fort Collins, Colorado, about the greatest problem facing the 244 million acres of public land that he is charged with overseeing. He was speaking of the wild horses. “This scourge “wreaks havoc” everywhere it goes, and — far more than a mere headache for land managers — it is an “existential threat” to the lands that Americans hold dear” (J. Thompson, 2019). In addition to the ecological

damage, opponents of increased rights for wild horses claim that the economic burden has begun to weigh heavy on taxpayers. In 2011, Oklahoma's then U.S. senator Tom Coburn complained that the \$71.8 million annually appropriated to the Wild Horse and Burro program could be better spent in other areas of need (Lester, 2011). The federal government pays approximately \$5.50/day for each horse and burro in short-term holding and around \$1.30/day per horse in long-term pasture facilities (NRC, 2013). A 2013 National Academy of Sciences report stated that current roundup methods, and the paying of private citizens to care for surplus wild animals, are expensive and unproductive (NRC, 2013).

At the same time, Rachel Fazio, a lawyer for Defense of Animals and other plaintiffs, revealed to a 9th Circuit appellate panel in San Francisco in 2011 that the horses are "an integral part of the environment," adding:

As much as the BLM would like to see them as not, they are actually a native species. They are tied to this land. There would not be a horse but for North America. Every single evolutionary iteration of the horse is found here and only here. (Sonner, 2011)

Horsepower, Wealth, and Prestige

A man on horse is spiritually as well as physically bigger than a man on foot. (Steinbeck, 1937)

And yet it is impossible to explain the symbolic transformation of *Equus caballus* in North America without describing the transformation of the peoples who hunted, trained, rode into battle or worked alongside them elsewhere. The horse that was reintroduced to the land that had originally conceived it, had been physically transformed by the steppes of Asia, the deserts of Africa, and the numerous complex civilizations that had enforced extraordinary demands on it for over 5,000 years (Flores, 2016; Philipps, 2017). Often assuming they were gods or that the horse and rider were one creature, the first horses seen by Native Americans in the 15th century were terrifying to them. Before the horse could get a foothold on surviving

as a reintroduced species in North America, the native people of the Southwest had to learn of the horse's value, other than as an enemy to destroy, or a source of food to slay and consume. Although it is debated by some indigenous wild horse researchers, the most widely accepted hypothesis for creating a future for the mounted capabilities of the Native Americans as well as horse breeding in sufficient numbers to establish a self-sustaining population in North America, could conceivably be traced back to Spanish conquistador Juan de Oñate, the wealthy son of a Spanish silver-mine owner and founder of Santa Fe de Nuevo México. In hopes of settling the Rio Grande area, Oñate's expedition departed from Mexico in spring, 1598 with roughly 130 soldiers, 10 priests and 400 settlers, together with their families and slaves as well as several thousand livestock. The colonizing families registered slightly more than 1,100 horses, mares, and colts in their possession (Thomas, 1979). A settlement was established about 30 miles northeast of present-day Santa Fe among the Pueblo Indians, who, like the Spanish colonists, were farmers. The Spanish soon set up a feudal system of huge ranches with natives serving as peasants. Oñate's horse population increased rapidly. These "Spanish Colonial Horses" were derived from Iberian stock and possessed the hot-blooded characteristics for fleetness and stamina of the Andalusian and North African Barb (Thomas, 1979).

Recognizing their value as a powerful weapon of conquest, the Spanish made every effort to keep horses out of the hands of natives, however in the end, the system they designed to give them every advantage may have led to their downfall. Though the natives were not officially allowed to ride horses under this system, as ranch hands they learned how to care for and breed them. In 1621, the Spanish governor in New Mexico relaxed the law to allow Indian ranch workers to ride horses as long as they had converted to Catholicism. Before long, the region had a growing

population of poorly treated underlings who knew everything there was to know about Spain's secret weapon. Escaped Puebloans (with the help of the horses they now knew how to ride) shared what they had learned with their surrounding nomadic tribes. By the 1640s, a few chiefs in the Navajo and Apache Tribes had learned to ride. In 1680 the Spanish finally lost their 200-year monopoly on horses in North America when the Pueblo Indians, led by their religious leader Popé, rose up against their cruel treatment under Spanish colonial rule. Over 400 Spaniards were murdered while many more civilians fled southward towards El Paso. Estimates of greater than 1,500 horses were left behind resulting in the largest one-time transfer of horses into Native hands. The horse population expanded rapidly across North America as the Pueblo people traded to the Plains tribes in the northeast, and to the Utes and Navajos in the northwest. The pueblo also experienced losses of horses to Apache and Comanche raiders, among others. By 1690 all of the Plains tribes in Texas had horses – within a half century horses had been traded northward up the Rockies to the Canadian borders and into the hands of Blackfoot, Crows and Cree. In the chaos of the revolt, many animals also ran loose into the High plains. Similarly when Spain abandoned its initial 1690s attempts at missions in Texas, the fathers simply turned mission livestock out in the wild, Spaniards commonly did not geld stallions, and when they returned to Texas in 1715, they found the stock they left had increased to thousands, in places covering the entire landscape with wild herds (Flores, 2016; Thomas, 1979).

Within a span of one hundred years, the horse transformed methods of warfare, hunting and transportation for the Great Plains cultures, making them formidable entities to settlers coming from the east. In the early 18th century, it was largely the Comanche who controlled the flow of materials, particularly horses, throughout the expanding frontier. At the same time, while native tribes traded large

numbers of horses to eastern – predominately French – markets, horses also spread across the Americas through the Euro-American wild horse trade industry. Propagated and led primarily by Phillip Nolan, an Irish American eccentric adventurer, the un-recorded wild horse trade industry was not condoned by Spanish rule. Consequently, Illegal entrance into Texas and involvement in wild horse capture proved a very dangerous occupation. Nolan, and the captured wild horse herds he brought back to Kentucky, later caught the eye of then Vice President Thomas Jefferson in his quest to form an expedition into Southwest territory to “learn of the behavior of the wild horses in their natural setting”. Jefferson also desired to catalogue the natural history and resource potential of the area. Due to military conflict with the Spanish, and subsequent massacre of Nolan during his last illegal attempt to capture horses, Jefferson’s expedition never occurred. The interpretation of the wild horse in its “natural setting” as Jefferson put it, would instead be captured by American artists such as George Caitlin or by the Native cultures themselves, before the wilderness frontier was lost forever (Flores, 2016). The concern for an understanding of the horse in its “natural setting” would not be revisited until nearly 300 years later.

The nineteenth century continued to bring a shift in settlement as pioneers from the East, fueled by the Homestead Act of 1862 began looking for a new life out West (discussed further in Chapter Six). Competition for suitable rangeland for agricultural purposes together with cattle barons’ control of immense tracts of land throughout the southern and northern Plains, led to a decrease in suitable habitat for wild horses, along with other large grazers, namely bison and elk (Flores, 2003). As settlers began fencing off the frontier, they also began to create boundaries of ownership as well as the boundaries between wild and domestic (Coggins et al., 2007). The fencing of the frontier brought the end of open range grazing in many

areas. At the same time, as the numbers of settlers rose, so too did the developing country's need for horsepower to drive the agricultural and ranching-centered economy (Smith-Thomas, 1979).

Multiple Use and Non-Profitable Herds

The public's heightened concern to protect America's landscapes from over-production and resource extraction during the end of the 19th century was underscored by the federal government's creation of multiple national parks, forestlands, and wildlife refuge areas in the mid-1870s (Coggins et al., 2007). A year after the Oklahoma Land Rush of 1889, the director of the U.S. Census Bureau announced that the frontier was closed as the "frontier line", a point beyond which the population density was less than two persons per square mile, no longer existed (A.O. Turner, n.d.). Consequently, the federal government's focus changed from an intense promotion of westward settlement to a focus on long-term land management, including various forms of multiple-use practices, from grazing to mining, forestry and recreation, ultimately decreasing available habitat (and value) for wild horses (Coggins et al., 2007; Flores, 2016; Philipps, 2017).

Increased resource competition and range use played vital roles in managing the money-making herds, as well as the wild herds that were *not* as profitable. The most pressing issue faced by land ownership committees at the end of the 19th century was the land degradation that resulted from the disastrous practice of overstocking the range by livestock operators in the 1880s. The "Tragedy of the Commons" exposed the urgent need to formulate responsible land management practices and led to the first government-controlled grazing program in the United States: the 1934 Taylor Grazing Act (TGA). This multiple-use act eliminated common land and, through grazing allotments, authorized ranchers to lease public land for a nominal fee in order to graze their domestic herds.

It was a crucial turning point for wild horses in the United States. Because its purpose aimed to keep public rangelands financially and physically productive, many advocates of wild horses in the West have long considered this land act as a symbol for the demise of the mustang (Mustangs "4" Us, n.d.). Prompted by the TGA, wild horse catchers hired by cattle and sheep enterprises as well as the federal government, sent massive numbers of wild horses to slaughter for use in fertilizer and pet food, in an effort to rid the land of their perceived unneeded presence and increase valuable forage for domestic herds. Select wild horses were kept for ranch work or sold to aid in the war effort by supplying mounts during the Civil War and again in World War I through the Army Remount Service. With the right skills in roping and riding, a decent income could be made by catching wild horses and selling them to the government or anyone else eager to pay the right price (Mott, 2014). These wild horse runners, largely cowboys and ranchers, became known as horse runners, or mustangers (Mott, 2014). By the early portion of the 20th century, wild horses were continuously targeted as they competed for resources needed for livestock, they were not a financial asset and their usefulness to the general public in an era of industrialization, was minimal. As a result of culling efforts, the number of free roaming horses took a dramatic downward turn. One source estimates that there were around 25,000 (some say as low as 17,500) wild horses left on the range in the late 1950s, down from 2 million at the turn of the century (Kania, 2012).

As their competition with humans over land persevered, wild horses migrated further away from human interference into ever more remote areas of the western landscape, to the mountains and high deserts where humans had not yet settled (Flores, 2016; Philipps, 2017).

Vanishing Species

A shift in public perception of the wild horse began to emerge in the late 1950's when a rancher with a day job as a secretary from Nevada exposed the inhumane methods of capture for wild horses. After witnessing a livestock truck filled with injured horses headed to slaughter, Velma Bronn Johnston, affectionately remembered as "Wild Horse Annie", began an intense grassroots letter writing campaign, involving primarily schoolchildren, to local and state representatives in Washington. Countless newspapers and publications, including explicit photos that unmasked the exploitation of her "wild ones", alerted the public and sparked cries of protest. According to a 1959 article in the Associated Press: "Seldom has an issue touched such a responsive chord" (BLM, n.d.d). Johnston was successful in her attempts to rally the support of the American public as they championed her efforts to ensure proper welfare and prevent wild horses from ending up in the slaughterhouse. Her appeals were not just for the protection of horses, but also for the care of the range as a renewable resource. As the daughter of a rancher and former mustanger, as well as the wife of a rancher, Johnston had an inside look at the needs of controlling populations of wild animals.

In January 1959, Johnston's childhood friend, Nevada Rep. Walter Baring, introduced a bill prohibiting the use of motorized vehicles and aircraft to hunt wild horses and burros on federal lands. The "Wild Horse Annie Act" became Public Law 86-234 on Sept. 8, 1959, however, it did not include Johnston's recommendation that Congress initiate a program for specific protection and management of wild horses and burros (Wild Horse Annie Act, 1959). Throughout the 1960s the methods of roundup and lack of concern for animal welfare (Johnston's supporters would say "massacre") continued, unabated. The subsequent efforts of the media campaign and countless testimonies by Johnston and cattle growers during senate hearings led

to the development and enactment of the Wild Free-Roaming Horses and Burros (WFRHB) Act. Unanimously passed by Congress and signed by President Nixon on December 15, 1971, the WFRHB Act (Public Law 92-195), delegated mustang management to the Department of the Interior's BLM and the Department of Agriculture's USFS (WFRHBA, 1971). In addition, Herd Management Areas and Wild Horse Territories were set aside for wild horse protection in areas where wild horses were known to exist at that time. Originally, these designated areas encompassed roughly 55 million acres. Today they include less than 23 million acres. While the BLM claims its decisions for decreasing acreage include observations that horses were not using these areas (as they were inappropriate for use) many wild horse supporters opine that this decrease in wild horse habitat favors other public land users and represents unequal distribution of resources (Return To Freedom, 2019).

Since the passage of the 1971 Wild Free-Roaming Horses and Burros Act, the management of America's mustangs has been stalled in controversy. Bitter disputes between horse advocates and those who oppose them are ongoing. Management decisions are taking place in the courtroom by legislators who may neither know the concept of land management nor understand the needs of free-roaming horses. Range scientists and conservation biologists are left in a quandary, wondering why their recommendations appear to fall upon deaf ears and what type of scientific data would be applicable in their efforts to attack an issue wrought with public disdain and passion for the same animal. Federal agencies are being pushed deeper into political crisis every year and land managers are unsure of how to proceed.

While U.S. policy dictates agencies adhere to federal mandates which align with traditional conservation efforts, land managers struggle in their efforts to respond to the public's growing concern for the Welfare of wildlife, as we will see in the next chapter.

CHAPTER THREE

CONSERVATION AND THE WELL-BEING OF WILD CREATURES

The reluctance of contemporary philosophers and scientists to embrace the view that animals have minds is primarily a fact about their philosophy and science rather than a fact about animals. (Jamieson, 1998)

Figure 5

*The Rescue of 8-Week-Old "Rosy" (Salt River Wild Horse Management Group, 2019).*⁴



Nurturing Nature for a "Rosy" Future

In June of 2019, a severely starved and dehydrated foal was spotted alone and stranded on the banks of the Lower Salt River within the Tonto National Forest, just minutes from suburban Phoenix, where the band of wild horses she was a

⁴ Crews were able to lead Rosy to the Maricopa County Sheriff's Fan boat and hoist her on board.

member of typically roam. Her twenty-five-year-old mother, "Rosa" known as the oldest mare in the Salt River herd at the time, had apparently died of old age and could not be located. With the Tonto National Forest Service's approval, the Maricopa County Sheriff's Office, the Arizona Department of Agriculture, and the Salt River Wild Horse Management Group (a non-profit wild horse advocate organization that has monitored and documented Salt River herd dynamics and movement patterns for nearly two decades), joined forces to rescue eight-week-old "Rosy." After locating and capturing the famished filly on the wrong side of the river, management volunteers secured her in the Sheriff's fan-boat where she was ferried to safety. Once safely on the other side of the river, Rosy was lifted into the back seat of a truck for her transport, as it was deemed by the Management group that it was safer for a wild foal than transporting her in a horse trailer where she might panic. Following the daring and wild rescue, the filly required plasma, hydration, and surgery for an umbilical hernia. According to Simone Netherlands, the Salt River Management Group's president, and one of my interviewees I've collaborated with over the past five years: "Had we not known these wild horses so well and noticed that Rosa was missing, Rosy would have died a pretty sad death" (Salt River Wild Horse Management Group, n.d.).

Although the Salt River horses are not federally protected (they do not exist on those federally recognized areas in 1971 under the WFRHB Act), House Bill 2340 in 2016 officially protects them under Arizona law. The bill's sponsor, Rep. Kelly Townsend, R-Mesa, said the intent of her bill was to protect horses in the natural habitat where they are found. Townsend did not include any provision for appropriating funds to the Department of Agriculture to implement any substantial management because, she said, "We didn't want to turn the horses into livestock. "The Department of Agriculture signed an intergovernmental agreement with the

USFS in December 2017 to implement the law and manage the horses. With no funds available, the agency brought in the Salt River Wild Horse Management Group (SRWHMG) as a contractor for short-term management of the horses that roam approximately 26,000 acres along that stretch of the lower Salt River just Northeast of Phoenix. In addition to the rescue facility, SRWHMG administers contraceptives to the herd through a darting method, which utilizes Porcine Zona Pallucida (PZP) to render the mare's egg impenetrable to sperm yet does not affect hormone levels or natural behavior. SRWHMG also monitors and seeks treatment for injured or sick horses, removes any horses that are too thin for rehabilitation, and implements emergency feeding and other plans for drought or other crisis situations. To accomplish this, SRWHMG must raise funds for hay, fencing materials and fertility control. Netherlands reports that the annual budget is about \$400,000. Because the horses roam on forest land, the rescue group also collaborates with the Tonto National Forest as part of its management agreement (Netherlands [Salt River Wild Horse Management], personal interview, 2019; Salt River Wild Horse Management Group, 2022; Krol, 2019).

In June 2015, just four years before Rosy's rescue, the Tonto National Forest Service announced plans to round up and auction off approximately 150 "feral" horses roaming freely along the Lower portions of Arizona's Salt River. The USFS claimed that the Salt River horses are the descendants of domesticated livestock that wandered from the nearby Salt River and Fort McDowell Indian Reservations. The horses, they argue, are "wreaking havoc" on the landscape. The Salt River Wild Horse Management Group believe the wild horses perform a crucial role in the riparian ecosystem. In their opinion, the horses reduce the risk of fire by eating dry flammable grasses and spread valuable seeds for regrowth of native plants through their feces. In addition to naming each horse and identifying which band they belong

to, the group's online data base (a phone App they utilize to monitor the horses) records individual birth and death rates as well as the date of name of each mare darted with PZP.

The lineage of these free-roaming horses, according to the group, can be traced back to the 17th century, when Spanish missionary Eusebio Kino is believed to have brought the first horses to the area. In their view, the horses should be protected under the federal Wild and Free-Roaming Horses and Burros Act (WFRHBA) of 1971, which declares wild horses "living symbols of the historic and pioneer spirit of the West" and protects them from "capture, branding, harassment, or death." When WFRHBA was passed, the BLM conducted a survey of the nation's free-roaming horse populations and identified roughly 30 million acres of land as "Herd Management Areas." Now, the agency protects and controls around 95,000 horses residing in these domains, including around 1,200 in Arizona. Officials noted during the population surveys conducted in the early 1970's, that some of the horses in the Salt River herd were branded, suggesting they were livestock. Others were claimed by neighboring Native American tribes. As a result, no federally recognized Herd Management Area was created for the Salt River horses; they were not recognized by the federal government as "wild" and the 1971 Act did not apply to them. Furthermore, the USFS was not authorized to manage the horses, as it does federally protected herds within "Herd Management Areas," to ensure they co-exist in a sustainable manner with other wildlife, livestock, plants, and people. When the horses wandered to a popular recreation area filled with campers and motorists in 2014, the agency, under authority of the 1971 Act, could have hired a couple of livestock operators to push the herd to a less populated area. Due to their classification as "feral", however, their only option by law was to delegate management of the "unauthorized livestock" to the Department of Agriculture and

have the horses removed. As Netherlands professed in her interview: "Historic evidence points to the fact that these wild horses have been here for over 400 years. If the USFS just wants to return these horses to their rightful owners, they're going to need a time machine."

According to Chandler Mundy, a forest range-land management specialist with the Tonto National Forest Service, the horses do not belong in a campground, not only for their own safety, but for the safety of the public. In fact, in Mundy's view, the Salt River Wild Horse Management Group has contributed to the problem. In July 2015 (before the Salt River Act was passed) the USFS discovered that the nonprofit was hauling in water troughs to entice the horses to move to a new location. The area was home to the threatened desert tortoise. "We can't just let (members of the nonprofit) go in there willy-nilly and do whatever they want," he said. "They aren't taking into account any of the other resources we manage for. The only animal they are worried about is the horse" (Krol, 2019).

The issues created by the more than 400 horses interacting with sensitive riparian and desert landscapes and nearly 6 million human visitors a year continue to plague the agencies mandated to resolve these management challenges. According to the Tucson-based Center for Biological Diversity, a nonprofit advocacy organization known for its work protecting endangered species through legal action, scientific petitions, creative media and grassroots activism, horses continue to go hungry despite a feeding program. Because they increasingly associate humans with supplemental feedings when forage is scarce, they are growing ever less leery when people approach them. Some horses even closely approach people, hoping to be fed. Without proper oversight, state and federal officials claim, the horses could be dangerous to motorists, hikers, and campers and, in their view, the possibility of

danger to recreationists is increasing (Silver [Center for Biological Diversity], personal interview, 2020).

Netherlands believes such talk is ludicrous. "The wild horses are not a safety hazard; not one incident has ever been recorded of a person being hurt by a wild horse. They live in harmony with their natural environment." The prompt and vehement public outrage to the USFS's proclamation, including over 63,000 signatures from concerned citizens, forced the USFS to take another look at their plan to remove the horses. The signees were assured by Netherlands that any acceptable plan must take into account the horses' unique souls. "The true value of any living being is not dependent on the opinion we may have of it," she says. "Each individual life and the quality of it should be considered" (Netherlands [Salt River Wild Horse Management], personal interview, 2019; Salt River Wild Horse Management Group, 2022; Alvarez, 2020). Horse advocates believe their activities to reduce population numbers have been successful and are hopeful for enough time to prove a contraception program that will naturally rein in horse numbers to less than 100 within the next decade. As of 2021, their efforts have decreased the birthrate from 120 in 2019 to only 6 in 2020. It appears their management goal is well within their grasp. At the same time, the number of horses that could survive on their own in the designated management area remains disputed (Salt River Wild Horse Management Group, 2022; Netherlands [Salt River Wild Horse Management], personal interview, 2021).

A year after her ordeal Rosy is now living her life within the compounds of the wild horse sanctuary. She has a friend there in "Peanut," a foal rescued only weeks before Rosy. According to Netherlands, "All of these horses in our facility would have actually died had we left them out in the wild. The only time we rescue them is if they're so injured that they cannot survive" (Netherlands [Salt River Wild Horse

Management], personal interview, 2021). She argues that it would not be safe to release the horses from her sanctuary because they must be gentled (tamed) in order to provide necessary medical care.

The regard for individual animal wellbeing represented in the Salt River foal rescue case raises key questions relating to the duties we have to wild animals, and indeed what the definitions of “wild,” “domestic,” “tame,” and “feral” imply (see Appendix A for definitions). Should these labels change our responsibility or our care and concern for animals? Although Rosy originated from a band of wild born horses, the habits and daily lives of this “de-domesticated” of her herd are continuously monitored. Under the watchful care and guidance of SRWHMG, Rosy had an “advance directive,” so to speak, of “resuscitate if nature becomes too harsh.” Rosy’s life was spared; however, animal rights activist might view that her “wildness” or right to autonomy, was not. There is no doubt she will be provided with excellent physiological care, yet she will live the rest of her life as a domestic, tame horse in captivity. Perhaps it’s a necessary trade off—Our mutualistic relationship with the horse, and our duty to provide for them as either a working partner, a companion or as an unattainable, wild creature, has, after all, always existed in that blurry realm between domestic and wild.⁵

How can we account for such disparities in stakeholder desires for Rosy’s well-being and how might such knowledge and understanding assist with tackling the broader goals of wild horse population control and environmental management? Because horses fall into a constructed classification somewhere between domestic

⁵ While **de-domestication** is the transformation, undertaken over generations, of domestic animals into self-sustainable wild or semi-wild animals, in the case of the Salt River Wild Horses, this process has generally been ongoing for over 400 years, without the *direct* aide of humans. In more recent human induced rewilding efforts de-domestication can be viewed as a sort of species restoration, a way of getting populations of animals to resemble their wild ancestors not only in appearance but also in terms of behavior. But it is most often advocated as means to an end: as part of a complex process of ecological restoration aiming to increase the so-called wildness and naturalness of an area in a long-term nature management strategy (Vera 2009).

and wild, the issue of de-domestication is taken up because it both engages and raises questions about the major norms governing animals and nature. The debate here concerns whether animals such as mustangs (considered by U.S. government institutions as “feral) or those undergoing de-domestication (as in rewilding efforts throughout many part of Europe) should be looked upon as wild or non-wild, and the effect this has on questions about how they should be treated. It also concerns the value of nature, and the kind and degree of nature management considered appropriate.

Even if *Rosy's preference* could be communicated to us, some animal rights activists and animal welfarists might argue that she would choose life in domesticity over no life at all; And perhaps she would prefer domesticity – with the human social interactions, luxuries of being well fed and her medical needs tended to, and the freedom from predation and the other hardships that extreme nature can deliver. How can we best interpret Rosy's physiological needs and when might our cares and concerns for her wellbeing be overridden by her right to autonomy or the need to provide for her environment?

Caring for Animals: Two Divergent Paths

Until we have courage to recognize cruelty for what it is – whether its victim is human or animal – we cannot expect things to be much better in the world. There can be no double standard. We cannot have peace among men whose hearts find delight in killing any living creature. By every act that tolerates such moronic delight, we set back the progress of humanity. (Carson, 2018)

Concerns for animal well-being and the treatment of wildlife have long been an issue in conservation biology and the public arena. The discourse surrounding efforts on how best to protect wild animals, sustainably manage their habitat, and promote *individual* animal welfare however, remains highly contested.

Although animal cruelty, unrestricted slaughter of wildlife, and species extinction were interwoven into the concerns of some early conservationists and

environmentalists, such as Aldo Leopold and Rachel Carson, the stewardship and protection of animals deviated along distinct institutional pathways throughout the mid-twentieth century.

Wildlife conservation became affiliated with governmental organizations involved in natural resource management where, historically, a utilitarian philosophy and domination values supported a view that non-human creatures should be used to benefit humans—and the greater good in general (Kluckhohn, 1951; Schwartz, 2006). Animal welfare and animal rights advocates, on the other hand, initially focused their efforts on defining legislation relating to captive or domesticated species, including companion animals, agricultural animals, animals used in experimentation or animals kept in zoos for conservation or recreational purposes.

While the issue of animal welfare in wildlife and captive species remains closely linked in the hearts and minds of the public and many conservation professionals, the moral and pragmatic tensions between policies and management actions that apply to either sphere (wild or domestic) have yet to be resolved (Bekoff & Pierce, 2017; Fraser, 2010; Ramp & Bekoff, 2015; Crist, 2013). At present, we lack clear ethical guidance on how to reconcile these concerns; and as Gremmen and Koene (2001) point out, individually focused norms of animal treatment may well conflict with herd-level norms.

The ongoing wildlife management debate over concerns for individual wild animals and the maintenance of healthy ecosystems stems from what appears to be irreconcilable differences on whether or not individual animal welfare should be recognized as an impediment to conservation efforts (Bekoff & Pierce, 2017; Fraser, 2010; Ramp & Bekoff, 2015; Crist, 2013; Minter, 2013). Crucial distinctions among practitioners supporting either the philosophy embedded within traditional conservation biology or that of animal rights/animal welfare, are tied to their

differing views over the emphasis on the harms experienced by wild animals in conservation actions. For decades, conservation interventions have predominantly focused on the protection of endangered species or populations of wild animals (in the aggregate, and especially as a dimension of biodiversity), protection of the ecosystems of which native wild animals form a part, or protection of “wild” nature itself (Minteer, 2017).

The urgency behind the need for conservation efforts emerged from estimates suggesting that up to 50% of all species worldwide would disappear by the mid-21st century (Koh et al., 2004). Such anthropogenic extinctions (Ceballos et al., 2015) would inevitably contribute to poverty and starvation, and ultimately reset the course of evolution on planet earth (Jackson, 2008; Millennium Ecosystem Assessment, 2009). Conservation biology’s desire to create a framework to tackle the numerous ecological problems that humans had instigated over the past several centuries was therefore a crucial endeavor to safeguard nature and a moral obligation in the protection of all species (Kareiva & Marvier, 2012; Soulé, 1985). To address these issues, Michael Soulé, renowned biologist and one of the founding fathers of conservation biology, established five guiding principles in the mid-1980s that eventually instituted the mission and laid the groundwork and values forming conservation biology. These guiding principles include: the preservation of diversity, the prevention of untimely extinctions, the maintenance of ecological complexity, the preservation of evolution, and the recognition that biodiversity has intrinsic value (Soulé, 1985).

In order to uphold this philosophy, conservation biologists developed a variety of solutions to protect species’ habitats from further degradation due to intrusions by the ever-increasing human population. Conservation practices such as captive breeding, introduced species control, biocontrol, conservation fencing, translocation,

contraception, disease control and genetic introgression (transfer of genetic material from one species into the gene pool of another) have resulted in the protection of hundreds of species from extinction (Hoffmann et al., 2010). It is well documented that such conservation tactics are warranted. For example, some species classified as “invasive” have the ability to outcompete and/or prey upon (and ultimately annihilate) comparatively naïve native species that are ill-prepared to vigorously respond or adapt to new competition for resources (Dowding & Murphy, 2001; Fritts & Rodda, 1998). In addition, accelerated climate change is shifting natural systems, generating species movements and translocations that result in a mismatch between reproductive output and peak food availability for wildlife (Vanbergen & Insect Pollinators Initiative, 2013). While these reports are by no means complete, they offer clear evidence on the importance of conservation actions and its urgency in the 21st Century (Soulé, 1985).

Ecologists now widely acknowledge that we live in a world dominated by humans, and therefore, the scientific underpinnings of conservation must include a consideration of the role of humans. Today's “conservation science” incorporates conservation biology into a broader interdisciplinary field that explicitly recognizes the tight coupling of social and natural systems. Emerging priorities include pursuing conservation within working landscapes, rebuilding public support, working with the corporate sector, and paying better attention to human rights and equity. In this sense, conservation strategies are promoted that simultaneously maximize the preservation of biodiversity and the improvement of human well-being (Kareiva & Mariver, 2012).

Although conservation biology was founded on an ethic that recognizes the intrinsic value of the living world, its methodologies and treatment of nonhuman animals are increasingly being questioned and criticized. Because a holistic ethic

assigns value to specific entities on the basis of its contribution to the integrity of an ecosystem, “lower” animals, even plants, microbes, and minerals, may merit greater moral consideration than “higher” sentient animals (Soulé, 1985; Callicott, 2014; Vucetich & Nelson, 2013; Batavia & Nelson, 2017; Noss, 1996; Piccolo, 2017). Such a focus on biodiversity of species has led to obstacles in scientifically validating the inclusion of the wellbeing of individual animals in conservation endeavors – both native *and* non-native. As a result of this ecocentric, holistic approach towards management, specific consideration for the intrinsic value and wellbeing of individual animals has not been incorporated into conservation biology’s core philosophy. While conservationists often exemplify profound concern, even love, for wildlife and nature, their management practices have been viewed by those within the animal rights or animal welfare movements as displaying a sort of “violent love” (Batavia & Nelson, 2017; Ramp & Bekoff, 2015; Wallach, Bekoff, Batavia, et al., 2018; Beausoleil, 2020; Callicott, 1980; Srinivasan & Kasturirangan, 2017).

Jim Estes, a veteran conservation biologist, gets to the heart of the matter in his dialogue of whether or not to rehabilitate oiled wildlife, specifically California sea otters.

The differing views between those who value the welfare of individuals and those who value the welfare of populations should be a real concern to conservation biology because they are taking people with an ostensibly common goal in different directions. Can these views be reconciled for the common good of nature? I’m not sure, although I believe the populationists have it wrong in trying to convince the individualists to see the errors of their ways. The challenge is not so much for individualists to build a program that is compatible with conservation — to date they haven’t had to — but for conservationists to somehow build a program that embraces the goals and values of individualists because the majority of our society has such a deep emotional attachment to the welfare of individual animals. . . As much as many populationists may be offended by this argument, it is surely an issue that must be dealt with if we are to build an effective conservation program. (Estes, 1998)

Wellbeing or Rights?

Although “animal rights activists” and “animal welfarists” have typically been grouped together as advocates for the wellbeing of non-humans, it is important to note the distinction between the two. Often, what is perceived by those in the general public as animal welfare has more to do with the ethical components surrounding what is classically termed “animal rights,” an ideology that deals with how animals *ought* to be treated and whether or not animals should be used by humans at all. According to deontological ethics, of which the legitimate animal rights view is an example, the rightness of an action is determined by its compatibility with a set of prescribed rules (for example, the right not to be killed or to be free from harm) and the duty of moral agents to respect that right.

Philosopher Tom Regan is recognized as largely responsible for developing the contemporary animal rights position. His principles exemplify a stringently zoocentric, animal-centered position. Regan argues that we have direct moral responsibilities to those animals that possess sufficient cognitive capacity such that they are able to form complex beliefs and desires. These self-conscious beings are “experiencing subjects of a life” and are therefore “ends-in-themselves” that should not be treated as mere resources for human satisfaction. This class of individuals, according to Regan (2004), includes all mentally normal adult mammals (Regan, 2004/1983; Beausoleil, 2020; Garner, 2013).

Proponents of the animal rights position reject utilitarianism (a philosophical approach that advocates for the “greater good” for all members or factors affected by a particular scenario) and consequentialism (an approach that focusses on the outcome of a particular decision or action rather than whether it comports with a particular right or rule) as justifying mass suffering or killing of wild animals. With this in mind, the animal rights position categorically opposes sport hunting and

trapping, the use of animals in agriculture for food or fiber, and generally, the use of animals in *all* manner, including scientific research, entertainment, the display and breeding of captive species in zoos and aquariums and pet ownership, the latter seen an example of exploitation and slavery (Ramp & Bekoff, 2015; Wallach, Bekoff, Batavia, et al., 2018; Rohwer & Marris, 2019; Wallach, Bekoff, Nelson, et al., 2015). While there are opposing views among animal rights proponents, the fundamental principle is that animals should be allowed to live according to their own natures; with a goal to eliminate the institutionalized use of animals for human use.

Advocates within animal *welfare* organizations, on the other hand, work primarily toward the avoidance of human-induced cruelty toward animals. The animal welfare movement strives to decrease animal suffering through humane treatment, but it does not have as a goal the elimination of the use and exploitation of animals. Animal rights activists sometimes differentiate between themselves and animal welfarists by saying that welfarists work for bigger cages, while they work for empty ones. The ethic of animal welfare also commonly labeled as “Animal Liberation,” is primarily concerned with reducing the human infliction of suffering on individual animals able to experience states of pleasure and pain, or those creatures that are sentient. This ideology is rooted in a consequentialist ethic that follows the leading philosopher in the movement, Australian Peter Singer’s utilitarianism, where the right action is the one that results in the greatest good for all those sentient beings whose interests are affected by the action.

In accordance with the animal welfare philosophy, it may be acceptable in certain circumstances to cause some harm to some animals if those harms are unavoidable and are outweighed by the anticipated benefits accrued by all ‘considerable’ parties, i.e., those having significant interest in the outcomes. Singer argues that sentient animals have such interests and that these must be considered

when forming judgments or rendering decisions that will affect them positively or negatively. Although he does not argue that animals must in all cases be treated as literal equals to humans, Singer does claim that their interests (as beings that can be harmed or benefited) deserve equal consideration by moral agents. Singer has further argued that a pervasive “speciesism” grips modern society, a discriminatory attitude parallel to racism or sexism that underlies the ethically indefensible neglect of animals’ interest simply because they are the interests of animals rather than humans (Francione, 2003; Singer, 2001).

Generally speaking, a primary distinction of utmost importance between animal welfare and animal rights is the ability to *measure* outcomes or make scientifically informed, pragmatic decisions surrounding animal wellbeing. Even though animal welfare may be interpreted differently among various practitioners within the disciplines of ecology, animal behavior, or animal physiology, as an empirical matter, it can be evaluated *scientifically* using animal based and resource-based measures (Marchant-Forde, 2015; Webster, 1998). Animal welfare research involves collecting behavioral & physiological data to make careful, objective inferences about how animals feel. Behavioral data are crucial because affective states (feelings with an emotional aspect) underpin learning and motivation; physiological measures (e.g. heart-rate or corticosteroid output) are used too, as are changes in animals chronically exposed to aversive conditions (e.g. stereotypic behavior, immunosuppression & reduced fertility). While the ethical view of animal rights cannot be evaluated in the same experiential sense, much of the motivation behind data collection may come from animal rights organizations (Webster, 1998).

The relatively new scientific discipline of animal welfare science evolved primarily from within veterinary medicine over the latter half of the twentieth century into an independent specialty in its own right. Originally, the field was heavily

focused on animal behavior (ethology), but it has emerged into a truly multi- and inter-disciplinary science, encompassing such sciences as behavior, physiology, pathology, health, immunology, endocrinology, and neuroscience, and influenced by personal and societal ethics (Webster, 1998).

Typical aims surrounding animal welfare science are to assess the relative impact of practices like different handling methods, or different types of housing, on animals – to identify those best for welfare and good quality of life. Another key aim is validating animal well-being as indicators (e.g. investigating whether particular vocalizations reliably signal pain or hunger). The results of animal welfare science studies are commonly published in the peer-reviewed academic journals *Applied Animal Behaviour Science*, and *Animal Welfare*. The primary professional academic society that animal welfare scientists belong to is the International Society for Applied Ethology (ISAE) (International Society for Applied Ethology, n.d.).

Tracking Individual Lives

Over the past several decades, the public has professed an unprecedented fascination in the rights and welfare of the individual lives of wild horses currently roaming America's public western rangelands. Many of these wild horses are individually named by their supporters on Facebook, (the Salt River Wild Horse management Group alone has over 70,000 followers), and also possess YouTube videos tracking their daily lives, artwork capturing their wild spirit, and documentaries enshrining their enduring saga on the American western landscapes (The Cloud Foundation, n.d.; Salt River Wild Horse Management Group, 2022; Wild Horses of Sand Wash Basin, 2020; Fine Art America, n.d.; SaddleBag Photography, n.d.). The intense interest in the lives of these mustangs has generally manifested as either a concern for their welfare, in terms of their flourishing or suffering, or their rights, where attention is focused on limiting the interference of humans. Because

certain members of the public will not accept a system of management that causes poor welfare, attention to individual wildlife welfare is increasingly becoming more crucial as one of the numerous criteria used in evaluating sustainability of various ecosystems and has also become a part of the scientific basis upon which important political decisions are being made. At the same time, the welfare of individual animals can be diminished where species, ecosystems, or wild nature is prioritized. For example, predation may be recognized as promoting ecosystem health, or as applying the right kind of selective pressure on a species as a whole. Although disturbing to the public, leaving a horse carcass on the landscape will provide for scavengers and a vast array of microorganisms for the proper functioning of ecosystems (Ramp & Bekoff, 2015).

A wide array of management approaches has been utilized by wildlife conservation biologists and government agencies in order to address the distinct concerns surrounding animal wellbeing and their environment. Although in many instances the public's desire for attention to animal welfare is incompatible with current methods of intervention, it is important to highlight that various interest groups are actually in *agreement* with agencies and conservation biologists (or with one another), albeit for different *philosophical* reasons. In other words, if philosophical differences are set aside, agreement on management practices might be recognized. Being mindful of these contrasting philosophies provides insight into the reasoning behind the public's desire for different management approaches, increases empathy towards another group's members, and in the long run, assists in stakeholders' ability to come to an agreement in decision making.

Due to their adherence to an animal rights approach towards management and their belief in the right of an animal to live autonomously, for example, many animal activist groups are opposed to any population control tactic, such as fertility

control with the use of Porcine Zona Pallucida (PZP), as they believe it interferes with the natural lives of free-roaming horses (Why should *humans* determine which mare gets pregnant?) (Hauser [Heber Wild Horse Advocate], personal interview, 2019). At the same time, environmentalists with an ecocentric/holistic approach towards management of the ecosystem might also favor this same “hands-off” policy in order to preserve the “naturalness” of the landscape. In their view, selecting which individuals reproduce could alter the effects of natural selection (the gene pool) and the hardiness of the herd. PZP is also classified by the Environmental Protection Agency as a pesticide which raises concerns by some members of the public for its use in the ecosystem (Salt River Wild Horses – Exposing the Truth, n.d.).

Although some animal welfare activists would support supplemental feeding of wild horses during drought in order to maintain the fitness and wellbeing of the individual animal, other rights activists oppose such human intrusion into the animal’s autonomous life. In their view, such meddling, over generations, could decrease the herd’s ability to adapt to their environment, search for proper resources and adjust in their behavioral and foraging abilities in order to evolve into the hearty wild species that can handle the stresses of living wild and free. At the same, time environmentalists and federal land management agencies, operating from a more holistic (i.e., population-level, ecological) viewpoint, would argue that such human intrusion (supplemental feeding) would lead to devastating consequences for the environment: increased trampling in feeding areas, alfalfa or noxious weed re-seeding, and increasing equid population numbers which would eventually exceed the capacity of the habitat. In the long run, such intrusions would decrease the overall fitness of all species leading to malnutrition and increased disease (Center For Biological Diversity: Silver [Center for Biological Diversity], personal interview, 2020).

The Herd Effect: Fitness of Feelings?

Further entangled in the health-of-ecosystems verses welfare-of-individual-animals dispute as it bears on wild horse management is the interpretation of animal welfare implicit in current wildlife management policies based primarily on “fitness” or physical states of populations of animals. It is important to note that while animal welfare science typically focuses on an *individual* animal’s threats to the health and the quality of life, such welfare may also rely on the fact that the animal may be residing within a unique family social structure or population group which, in turn, relies on valuable biotic and abiotic relationships within the ecosystem. Animal welfare science can thus speak of the welfare of a particular population (Francisco [Forest Service employee], personal interview, 2021).

What duty do wildlife managers have to provide care and concern for wildlife when *entire* populations are at risk or pose threats to other wildlife or livestock?

Infectious diseases transmitted between wildlife and livestock are increasingly becoming one of the primary drivers threatening the long-term viability of wildlife populations, particularly through the isolation of protected areas (Newmark, 2008). In addition, the increase in human agricultural activities along the boundaries of wildlife reserves or within National Forests has augmented the sharing of diseases between wildlife, livestock, and humans. The Yellowstone bison population present a prime example of such a need to examine our duty to provide aggressive control for vulnerable wildlife populations. Since 1917, the Yellowstone population has been infected (likely by cattle) with bovine brucellosis, a bacterial disease caused by *Brucella abortus* that may induce abortions or the birth of non-viable calves in livestock and wildlife (Schumaker et al., 2012). When livestock are infected, economic loss from slaughtering infected cattle herds and imposed trade restrictions affect more than just the owner of the infected stock. The impacts are shared by

others in the industry statewide. Brucellosis has been declared eradicated from cattle herds in the United States, but bison and elk persist as the last known reservoirs of infection in the greater Yellowstone area (Cheville et al., 1998). Yellowstone's Interagency Bison Management Plan has therefore included widely varying heavy handed approaches to management (some heavily opposed by animal rights activists) including hazing by humans on horseback, all-terrain vehicles, or in helicopters to prevent bison egress from the park, capturing all bison attempting to leave the park and testing them for brucellosis exposure; sending test-positive bison to slaughter and vaccinating all test-negative bison except adult females during the third trimester of pregnancy (Greater Yellowstone Coalition, n.d.).

A similar concern in wild horses that may also spread to domestic livestock is equine infectious anemia; sometimes called 'swamp fever.' This infectious disease causes acute, chronic or symptomless illness, characterized by fever, anemia, swelling, abortions, irreparable damage to heart and kidneys and weight loss in horses, ponies, mules and donkeys. Approximately 50% of all affected animals die. The cause is a Lentivirus (a 'family' of virus that includes the human immunodeficiency i.e., HIV virus), that is typically transmitted by biting insects in low-lying 'swampy' areas.

Not surprisingly, the transmission from wild to domestic livestock goes both ways. In 2003, infectious keratoconjunctivitis (pink eye) was contracted by Bighorn sheep within the Silver Bell range in Arizona from domestic goats in the area. While pink eye is not directly life threatening, it can cause blindness. Although the Arizona Game and Fish Department is not in the practice of vaccinating or treating wildlife for such diseases, there has been an isolated case in Idaho where an individual moose was treated by game management agencies for pink eye due to public concern (T. Thompson, 2020).

This concern for the physiological “fitness” of a population contrasts with the notion of animal welfare, as interpreted by the standards employed by practitioners in animal welfare science, (e.g., practicing veterinarians, animal behaviorists, animal physiologists) who emphasize the dynamic integration of “fitness” *in addition to* “feelings” (mental experiences, affective states) for a complete understanding of individual animal’s wellbeing. A wild horse recently removed from the range may have access to the “five freedoms” (described below) associated with the measurement of good welfare in captive species and may appear to be in good physical condition as measured through the assessment of stress hormones (e.g. cortisol), or through the assessment of body conditioning, percent body fat, and so forth. At the same time, this wild horse has lost her right to autonomy, as well her family members and other social connections. Some animal rights activists might claim these horses that have been gathered from the range have been wrongly “imprisoned” (Salt River Wild Horses – Exposing the Truth, n.d.).

Although animal welfare as a general societal concern has a deep history, the investigation of animal welfare using rigorous scientific methods is a relatively recent development. As a result of the efforts to investigate intensive livestock farming practices in Great Britain, the well-known “Five Freedoms” were established in 1964 as a framework for gauging animal welfare (Broom, 2011; Broom & Fraser, 2015; Fraser, 2010; Armstrong & Botzler, 2017). In its modified form the framework decrees that good welfare includes the following: 1) the animal is free from hunger, thirst and malnutrition, because it has ready access to drinking water and a suitable diet; 2) the animal is free from physical and thermal discomfort, because it has access to shelter from the elements and a comfortable resting area; 3) the animal is free from pain, injury and disease, thanks to suitable prevention and/or rapid diagnosis and treatment; 4) the animal is able to express most of its normal

behavioral patterns because it has sufficient space, proper facilities and the company of other animals of its kind; and 5) the animal does not experience fear or distress, because the conditions needed to prevent mental suffering have been ensured (Broom, 2011; Broom & Fraser, 2015; Fraser, 1999).

While earlier attempts to define animal welfare referred to individuals living “in harmony with nature,” the first *usable* definition was brought forth in 1986 by English biologist and founder of “Animal Welfare Science,” Donald Broom, who defined animal welfare as the ability of an animal to cope with its environment and living conditions (Broom, 2011). A more recent framework, developed in 1997 by applied animal behaviorist David Fraser (et al.), contends that animal welfare includes three important concepts: 1) an animal’s feelings or emotions; (affective state), 2) an animal’s ability to perform natural behavior, and 3) an animal’s health and biological functioning (Fraser et al., 1997). Since then, organizations such as the American Veterinary Medical Association (AVMA) and World Organization for Animal Health (OIE, 2020) have incorporated this explanation into their definitions of animal welfare (Larkin, M., 2018; World Organisation for Animal Health, 2022).

A Cry in the Wilderness

With the rise of web-based access and social media, as well as increased urbanization and the rural-urban mixing that has increasingly become a part of the landscape (especially in the American West), society has become progressively more aware of conservation and land management agency decisions that often result in the harm and death of animals. This recognition is evidenced in the dramatic escalation in human-wildlife conflicts and opposition from animal advocacy and activist groups (Redpath et al., 2012). What is now becoming evident to the public is that it is not uncommon, in the name of conservation biology, for certain members of a single species to be killed for the “good” of their species or for members of one

species to be killed for the “good” of another species (golden hamsters for black-footed ferrets, for example) (Bekoff, 2010). Animals are also routinely killed or culled to prevent their movement from protected areas to private land or other non-protected public areas (e.g., bison, wolves, dingoes, horses) due to the fact that they appear to pose a threat, are considered invasive or “pests,” or have consumed more than their share of available resources. That these animals bear the burden of accomplishing conservation objectives through their death or misfortune appears, to animal advocacy and activist groups, to have been ignored by conservation practitioners. Conservation scientists and agencies involved in such interventions, however, justify these methods on practical and utilitarian grounds. Such methods provide (in the familiar words of Gifford Pinchot (the Grandfather of U.S. forestry): “the greatest good of the greatest number in the long run” (Ramp & Bekoff, 2015; Littin, 2010).

In addition to the public’s increased awareness of wildlife management’s actions, science has recently revealed a growing recognition of the consciousness and sentience of animals. News headlines today frequently report on these findings and focus on animals within two types of scenarios. The first involves coverage of cognitive ethologists’ description of the “inner lives” of animals. These new findings on animal cognition or emotion rapidly make their way into the popular press with such headlines as:

- Chickens are smart, and they understand their world
- Elephants get post-traumatic stress too: Calves orphaned by the killing of their parents are haunted by grief decades later
- Fish determined social status using advanced cognitive skills
- New Caledonian crows show strong evidence of social learning
- Pigs possess complex ethological traits similar to dogs in chimpanzees
- Rats will save their friends from drowning: New findings suggest that these rodents feel empathy
- Squirrels can be deceptive. (Bekoff & Pierce, 2017, p. 1)

Another category of reporting brought to the public's attention highlights how individual animals or a particular group of animals appears to have been "victimized" or abused by humans in some considerable way. These stories often create a frenzy from the social media, generating both moral outrage and deep reflection on the part of the reader regarding the personal lives of humans and non-humans. Narratives emphasizing incidents in which the freedom of an animal has been portrayed as being profoundly violated by humans have depicted:

The killing of an African lion named Cecil by an American dentist wanting a trophy head.

The killing of a mother grizzly bear named blaze who attacked a hiker in Yellowstone National Park.

The case of a male polar bear named Andy who was suffocating and starving because in an overly tight radio collar placed around his neck by a researcher. The euthanizing and public dissection of a giraffe named Marius at the Copenhagen zoo because he was not good breeding stock.

The ongoing legal battle to assign legal personhood to two research chimpanzees, Leo and Hercules.

The exposure of SeaWorld for cruel treatment of orcas, inspired by the tragic story of Tilikum and the documentary Blackfish.

The killing of a gorilla named Harambe at the Cincinnati Zoo after a small boy fell into the animal's enclosure. (Bekoff & Pierce, 2017, p. 2)

The fact that these events have created such a stir reaffirms the notion (as discussed by researcher Michael Manfredi in Chapter One), that U.S. society is experiencing a revolution in our relationships to animals. Not only has the modernization of society generated a cultural shift in values that increasingly emphasize self-expression, social affiliation, and egalitarianism over subsistence needs (Schwartz, 2006; Inglehart, 2018), it has also instigated greater concern for the environment, increased interest in public participation in political processes, and new perspectives, including a greater emphasis on harmony over mastery in human-environment relationships (Schwartz, 2006; Gelissen, 2007; Inglehart, 2018). Increased urbanization and social isolation has further witnessed a shift in social priorities that emphasize the need for companionship and a sense of community,

resulting in a social connectedness with wildlife as companions or fellow life forms (Bess et al., 2002; Hortulanus et al., 2006).

Presently, the public's pleas continue to vocalize heightened concerns about our duty to provide proper welfare for both captive and wild species. In the words of biologist and animal advocate Marc Bekoff and bioethicist Jessica Peirce:

We are at a tipping point. People who have never really been active in defense of animals are outraged by this senseless violation of these animals' lives and freedom. The growing awareness of animal cognition and emotion has enabled a shift in perspective. People are sick and tired of all the abuse. Animals are sick and tired of it too. (Bekoff & Pierce, 2017, p. 2)

The question many animal welfare advocates and activists are now asking is: How long will supporters of a holistic concern for nature, and natural resource managers immersed (as many of them believe) in a philosophy of Dominionism allow these situations, involving the perceived victimization of individual animals, to continue? Where do the trade-offs in harm and death for captive and wild animals, justified in the name of conservation and human benefit, stop? How many individuals is it acceptable to harm and kill in the name of conservation? Beyond the pain and suffering involved in the practice of standard conservation methodologies, at what point does the well-being of the individual and their right to autonomy matter?

These have not been easy questions to resolve, because the problem has not been with conservation itself, but rather with the manner in which it has been performed. "Compassionate Conservation" (discussed later in this chapter) is an emerging movement that has criticized widely used traditional conservation practices (set forth by Soulé and others of the founding generation of conservation biology) that aim to confront the biodiversity crisis (Wallach, Bekoff, Batavia, et al., 2018; Wallach, Bekoff, Nelson, et al., 2015; Ramp et al., 2013). The essential distinction between compassionate conservationists and mainstream conservationists is the former's deontological approach towards management and a focus on the welfare of

the individual and the latter's consequentialist approach – and a focus on conserving species, populations and habitats. Compassionate conservation seeks to not only treat animals as individuals, but promote a first principle of “do no harm” (Bekoff, 2010). Other principles linked with the movement include values of inclusivity and peaceful co-existence (Hayward et al., 2019). Because “Compassionate Conservation” is still a developing discipline, the challenge has been to reconcile those in the field who embrace a more rights-based position, with other proponents who maintain a more welfarist approach or subscribe to virtue ethics (Singer, 2001). The connection, in some instances to a rights-based approach in wildlife management has led to the belief by many traditional conservation biologists, that compassionate conservation is an extension of animal liberation. They continue to profess that it’s only under the “Compassionate Conservation” umbrella that their philosophy becomes “dressed up” as conservation. Traditional conservation biologists further argue that such a focus on the rights of individual animals at the expense of populations may lead to the extinction of many species and populations. Additionally, scientific processes and methodologies employed by traditional conservation approaches should be adhered to as one cannot decide to ethically pick and choose some invasive species to be left alone and some species that we should be taking an ‘uncompassionate’ approach toward. Opponents of ‘Compassionate Conservation’ are of the mindset that greater net harm and poorer conservation outcomes result from the “first do no harm” approach (Hayward et al., 2019).

While both conservation professionals and members of the American public agree that we are obliged to treat wild animals with concern for their welfare, their views or the policies they must uphold vary on the extent of our obligations to individual wild animals and how those obligations interact with responsibilities to protect other aspects of ‘nature’ and the needs of humans. A seminal example of less

extreme 'Compassionate Conservation' may be that described for zoos by Melbourne Zoo CEO and ethicist, Jenny Gray. She envisages a middle ground where zoos continue to contribute to biodiversity conservation but with a transparent approach to death and suffering that reflects the evolving scientific literature on sentience (Gray & Sartore, 2017). Euthanasia, for example, would be consistent with such an approach.

Measuring "Good" Welfare

The complications and complaints surrounding the manner in which conservation has been practiced revolves around the public's evaluation and interpretation of welfare issues and land management policies. At the same time, the debate has also been driven by varying and often diverging philosophical views making it quite challenging to assess the wellbeing of wild animals. Problems continue to arise as animal welfarists, animal rights groups, practitioners in the field of conservation biology, practicing veterinarians and the managing agencies themselves, focus on unique concerns and multiple interpretations of what constitutes "good" animal welfare. Some emphasize the basic health and functioning of animals, especially matters surrounding disease and injury. Others emphasize the "affective states" of animals – states like pain, distress and pleasure that are experienced as positive or negative. Others highlight the ability of animals to live realistically "natural" lives by carrying out natural behavior – what might occur in the animal's "wild" state – as well as the existence of natural elements in their environment in order for them to live autonomously.

In many cases this "wild state" is directly related to available space to maintain adequate populations to preserve genetic diversity. It is essential to note that although the criteria overlap substantially, they are sufficiently independent that a single focus on any one criterion may lead to poor welfare as judged by the others.

Furthermore, the science used to measure the attributes of proper welfare may be interpreted in various ways. Because our understanding of animal welfare is both value-based and science-based, animal welfare is like many other topics of normative science, such as environmental sustainability, where the tools of science are used within a framework of values (Fraser, 2008).

Further obstacles that arise in providing for the welfare of wild animals, revolve around the fact that *nature itself* and wildlife protection pursuits are continuously evolving. Humans are progressively infringing on wildlife and their habitats, not only through the effects of heightened urbanization, recreation and industrialization, but also through conservation and management activities. While the perception of "wild" – as opposed to domestic – is usually interpreted as animals not bred or controlled by humans, increasingly, wild animals are not just left alone to live their own lives leading to further *difficulties* in the interpretation of our moral concerns and duties towards them. Domestic animals have come into existence through the human manipulation of species' genes. Does it follow, then, that such manipulation of genes increases our moral concern and duties toward them? (If we created it, we take care of it?) Or, on the other hand, if we did not create it, do we have less of a duty to protect and care for it? While animal welfare legislation reflects care and concern for animals as captive species, wild animals are often exempted from animal welfare statutes by categorizing them as *pests*, or *invasives*, terms used to define a species that is not worthy of moral consideration – a nuisance, out of balance, undesired, or exotic (Nagy & Johnson, 2013).

The use of such anthropomorphic labels can lead to particular forms of bias in management (Wallach, Bekoff, et al., 2018). A case in point is the European Union's law on regulation of "Invasive Alien Species," which requires member states to control introduced wildlife. For this purpose, raccoon dogs (*Nyctereutes*

procyonoides) are killed using the Judas method in Sweden. In this program, captured individuals are first fed and medically treated in the hope it will increase their attractiveness to potential mates, to make it easier to find and kill them (European Commission, Directorate – General for Environment et al., 2015).

Labeling wildlife, such as raccoon dogs, as “invasive” precludes moral concern for their lives as individuals, and also for their introduced populations. Their control and eradication is meant to promote valued native species (Wallach et al. 2018). Arian Wallach, an ecologist at the University of Technology Sydney and one of the leading voices in compassionate conservation, is well known for her criticism of invasion biology. She was quoted on Vox News as calling “invasive” species “nothing less and nothing more than a curse word” used to demonize species and exclude them from moral consideration (Bolotnikova, 2021).

A unique concern surrounding animals that have a domestic counterpart, such as America’s mustangs, is the ongoing search for a proper term to describe their “wildness” and thus, our duty to provide for their care. Because they were previously under the custody of humans at some point in their evolutionary history, the negative term typically associated with mustangs is ‘feral.’ In order to elevate the horse’s status (and draw attention to a desire to provide for their well-being), members of horse advocate groups, such as the Salt River Wild Horse Management Group, have recently suggested “de-domesticated” (Hughes [Salt River Wild Horse Liaison], personal interview, 2018). The term de-domestication was originally coined to describe rewilding efforts such as that of Konik ponies and Heck cattle in Oostvaardersplassen nature reserve in Holland in 1984. The de-domestication process is an attempt to turn domestic animals into self-sustainable wild or semi-wild animals. It can be viewed as an end in itself: as a sort of species restoration, it’s a way of getting populations of animals to resemble their wild ancestors not only in

appearance but also in terms of behavior. It is most often advocated, however, as means to an end: as part of a complex process of ecological restoration aimed at increasing the so-called wildness and naturalness of an area in a long-term nature management strategy (F. Vera et al., 2007). The Oostvaardersplassen restoration project pursues both of these goals. It seeks to manage the landscape using an advanced breeding scheme sometimes referred to as 'breeding back'. This is a process in which the genome of an extinct subspecies is, in effect, re-assembled from genes that are still present in the gene pool (Koene & Gremmen, 2001). This can also happen naturally. Back-breeding is thought to occur in the wild in feral populations, where, for example, domestic pigs seem to revert to 'wild boar' status in their appearance, behavior and hardiness. While de-domestication is a transformation undertaken over generations, this process, in the case of the Salt River Wild Horses (as well as the nearly 95,000 wild horses roaming in the American West, has generally been ongoing for over 400 years, without the *direct* aid of humans (Gamborg et al., 2010).

Further complicating our moral duties to wildlife and ecosystems is the issue of exotics: those non-native species that were transplanted to another ecosystem by natural (e.g., airborne or within the fur of another species) or unnatural means (by humans). Some exotics adapt so well to their new environments they develop vital symbiotic relationships with unique native species (those endemic to the area) that now rely on them for their existence. Other exotics become "invasive" as native species are unable to compete with them for vital resources or escape predation. Finally, during this intensified era of human influence – heralded as the "Anthropocene" – the resulting effects of climate change have forced species to migrate to new, "non-native" areas, creating novel ecosystems and leaving the

philosophy of ecosystem management and restorative efforts in disarray (discussed further in Chapter Five) (Davis, Chew, et al., 2011).

Although animal welfare science has assisted in practitioners' efforts to identify and solve animals' individual welfare problems – by addressing domestic species in homes or on farms, exotic species in zoos, or selected research subjects in laboratories – it has not resolved the disparities attributable to the different criteria for assessing welfare of wild animals in federally managed public lands including our National Forests, National Parks, National Wildlife Refuges and public rangelands. Competing viewpoints and prioritizations of values surrounding our moral concern for animals continue to lead to ethical predicaments and disagreements on where our wildlife management priorities should lie. The questions are difficult, and seemingly endless. What should we preserve and what duties do we have in the protection of wildlife? Should it be their "wildness" or right to autonomy? Their habitat? Their individual well-being and emotional state? Is it possible to balance different, potentially conflicting values such as nature protection and individual animal welfare? What are the misconceptions and trade-offs surrounding care and concern for individual animals? Would moral individualism provide better welfare for wild horses (as some animal welfare/rights supporters argue) or would their individual lives be enhanced by the creation of a sustainable environment where the greater good for all has been taken into account (moral holism)? Are the trade-offs of welfare worth the loss of freedom? What principles and considerations should influence humans more generally in intervening in animal populations on the landscape?

The attempt to grapple with these questions, moreover, raises even more concerns. Can the development of a framework that incorporates philosophical approaches supported by animal welfarists or proponents of animal rights assist policy makers and wildlife managers in their efforts to ethically manage wild horses

while sustainably managing their environment? If so, how? How does the right to autonomy for wildlife factor into decision making? Finally, with regard to terms used by those who have traditionally opposed wild horses on the landscape, should we justify a change in concern for the welfare of animals if the species in question is considered livestock, domestic, feral, exotic, or invasive?

The conflicts surrounding our moral duties to wildlife and their habitat reside within the intersection of the philosophies of animal rights and conservation biology (biodiversity protection). My aim with the remainder of this chapter is to examine how the philosophical distinctions and tensions between animal/individualist ethics and conservation/holistic ethics helps explain the conflict over wild horse management.

The Rise of Compassionate Conservation

The initial battle between animal ethicists and conservation ethicists in their deliberation over concern for animal wellbeing and the environment was perhaps first sparked by philosopher J. Baird Callicott in his now infamous 1980 paper, "Animal Liberation: A Triangular Affair." In it, Callicott discusses the philosophical incompatibilities between a sentient-based concern for animal welfare (such as that voiced by animal welfarists) and those involved in the developing field of conservation biology (which he depicts as shaped by a nonanthropocentric holistic approach, such as his own). He argues that, at their respective ethical foundations, environmentalism and animal welfarism are sharply distinct, and even opposing. These opposing animal liberation and "ecocentric" views will inevitably involve conflicting management and policy goals in practice. Although Callicott in later years backed off on his attack of animal welfarists—his paper consequently drove a wedge between animal welfare and what came to be the canonical position within

environmental ethics: a holistic, ecological ethic (Callicott, 1980; Minter, 2012, Chapter 6).

Animal rights philosopher Tom Regan argued in response that one serious implication of this holistic environmental/conservation ethic is that the individual may be sacrificed for the greater biotic good. Regan opposes such actions because:

They deny the propriety of deciding what should be done to individuals who have rights by appeal to aggregative considerations, including, therefore, computations about what will or will not maximally contribute to the integrity, stability, and beauty of the biotic community. (Regan, 2004/1983, p. 361)

Furthermore, Regan dismisses any attempt to subvert the rights of individual organisms to those of the species, or ecosystem as "environmental fascism." Instead he proposes his rights-based environmental ethic consistent with his deontological version of animal welfare ethics: "...Were we to show proper respect for the rights of individuals who make up the biotic community, would not the community be preserved?" (Regan, 2004, p. 362-3). According to philosopher Mark Sagoff, the question is ludicrous. He points out, that nature is not fair and does not respect the rights of individuals.

The misery of animals in nature – which humans can do much to relieve – makes every other form of suffering pale in comparison. Mother Nature is so cruel to her children.... One may modestly propose the conversion of national wilderness areas, especially national parks, into farms in order to replace violent wild areas with more humane and managed environments. Starving deer in the woods might be adopted as pets. They might be fed in kennels; animals that once wandered the wilds in misery might get fat in feedlots instead. (Sagoff, 1984, p. 303)

Callicott likewise emphasizes that the attempt to safeguard the rights of each and every individual member of an ecosystem would:

Correspond to an attempt to impede all trophic processes beyond photosynthesis – and even then, we would somehow have to deal ethically with the individual life-threatening and hence rights-violating competition among plants for sunlight. An ethic for the preservation of nature, therefore, could hardly get off on the right foot if, at the start, it condemns as unjust and immoral the trophic asymmetries lying at the heart of evolutionary and ecological processes. (Callicott, 1988, p. 165)

Despite attempts by environmental ethicists such as Gary Varner to find common ground between animal – and environmentally-centered values at either the philosophic or pragmatic level, there are those who argue that the disparities between the ethically individualistic, animal-centered commitments and conservationists' more holistic commitment to promoting thriving populations and ecosystems are too diverse, even in cases where animal-centered and biodiversity-centered advocates share a common cause (Collard & Contrucci, 1989).

At the same time, and as mentioned above a relatively recent and approach with a deep regard for the individual lives of wild animals has attracted much attention in conservation biology. This philosophy is largely voiced by the Centre for Compassionate Conservation, which was established at the University of Technology, Sydney, three years after the international wildlife charity "Born Free Foundation" had originally coined the term "compassionate conservation" as the name for an Oxford-based symposium it hosted in 2010 (Marris, 2018). The Compassionate Conservation movement, which remains controversial within mainstream conservation biology, was initiated among a particular group of wildlife scientists, philosophers and advocate allies interested in wild animal welfare, compassionate law and policy, novel ecosystems, predator friendly ranching, land sharing and coexistence and conservation ethics. To cultivate the newly formed discipline, one of the prominent founders in the field, Marc Bekoff, edited a collection of essays in *Ignoring Nature No More: The Case for Compassionate Conservation*. The book was published in 2013 (Bekoff, 2013). Embedded within an ethic of care, compassionate conservation approaches wildlife management by first recognizing that moral concern be applied to the interests and agency of all animals that possess sentience. These conscious beings have the power to perceive their surroundings and exhibit the awareness and cognitive ability necessary to have feelings. All sentient creatures are

accepted as persons who should be treated with respect and not treated as a means to other ends (Bekoff, 2013; Gray & Sartore, 2017).

It is important to note that compassionate conservation contains elements of numerous ethical approaches, and these are often not deployed consistently, especially by the biologists involved in the movement. Crucial to the philosophy, however, is the strongly held belief that a person of good character shows compassion, that this virtuous person will be moved by the grief or suffering of others (wild animals in this case) and that they will also feel the need to act or eliminate that suffering. Because virtue ethics focuses on the intention of the moral actor and their character to decide which actions are morally acceptable, such an approach might be viewed as not being concerned with the outcomes of those actions, e.g., whether the wildlife intervention actually relieve suffering or not (Beausolei, 2020; Wallach, Bekoff, Batavia, et al., 2018; Fraser, 2012; Ramp & Bekoff, 2015). The four key tenets of the compassionate conservation approach which suggest both a deontological and consequentialist approach include: 1) Do No harm: favor non-invasive and non-lethal strategies for achieving conservation goals; 2) Individuals Matter: collectives, such as populations and species, matter because they are made up of numerous individuals; Researchers should focus attention on affective states or how animals *feel* about their environment and what happens to them; 3) Value All Wildlife: Compassion should not be limited to those wild animals that have instrumental value for humans; Protect the interests of individual wild animals regardless of their origin or current population size; and 4) Peaceful Coexistence: Always seek opportunities to resolve human-animal conflict in ways that do not harm the animals (Beausolei, 2020).

Because compassionate conservation is an evolving discipline, there remains some confusion about the ethical basis of its four tenets and their practical

application (for example, which individuals deserve moral concern, only sentient creatures?). A common thread that weaves throughout compassionate conservation is its identification with the numerous cultures worldwide who have long recognized that the earth is animated with a wealth of non-human persons with whom humans form kinships. In their belief, the downfall of conservation biology's understanding of these human/non-human relationships is attributed to western tradition which has largely confined the concept of personhood to humans, a manifestation of human exceptionalism that upholds humans as a categorically separate and inherently superior class of beings (Ramp & Bekoff, 2015; Wallach, Bekoff, Batavia, et al., 2018; Beausoleil, 2020; Bruskotter et al., 2019; Ben-Ami, 2017; Rohwer & Marris, 2019).

Compassionate conservation has been championed by many animal welfarist and animal rights groups. Even so, as discussed earlier in this chapter, it has not come without criticism. Opponents of compassionate conservation have made claims that its ideology is "seriously flawed" and impractical. The "do no harm" approach, in their view, simply goes too far, with implications that could lead to negative outcomes for wildlife, ecosystems, humans and native biodiversity. Implementing a compassionate conservationist's approach would not necessarily lead to positive outcomes for the welfare of individual animals. According to these critics, compassion need not preclude humanely killing an animal if that reduces the animal's suffering, enhances the survival of the species or its habitat, or safeguards human life or other more threatened species (Rose, 2011; Hill, 2013; M. Robinson, 2014). Animal behaviorist Andrea S. Griffin (et al.) argue that compassionate conservation's focus on empathy "is subject to significant biases and that inflexible adherence to moral rules can result in a 'do nothing' approach" (Griffen et al., 2020, p. 1139).

Perhaps the greatest opposition is embedded within the belief that compassion in conservation contributes to a distinct culture of personalizing and anthropomorphizing animals. As illustrated by conservationist Paul Jepson, transposing human qualities and concepts to species involved in human-wildlife conflict (e.g., elephants as companion species) trivializes the devastating violence people living in shared spaces have to contend with (Oommen et al., 2019; P. Johnson et al., 2019; Jepson & Canney, 2003). Bekoff has responded to such criticism by confirming that, while compassionate conservation values individual animal lives, it is also sensitive to cultural differences and is all for biodiversity. Moreover, it recognizes that both nonhumans *and* humans matter. Bekoff further acknowledges that compassionate conservation is pluralistic and that:

Those who follow its basic tenets are a heterogeneous lot with different views about what compassion means.... it's likely that while the majority of those who espouse the principles of compassionate conservation are against killing, there are some who might be open to considering killing in very few specific instances. (Bekoff, 2019, p. 1)

Undeniably, the inclusion of animal welfare in conservation interventions remains entangled in heated debates amongst conservation biologists. Attempts to measure (or even define) animal wellbeing, however, have also been fraught with controversy. The discipline of animal welfare science has since evolved with a goal of applying scientific methods to inform an understanding of what harms (and benefits) animals might be able to experience, in which circumstances they might experience them, how particular harms compare to the harms resulting from alternative actions, and how successful any attempts to mitigate harms have been (Fraser, 2012; Beausoleil, 2020; Fraser & MacRae, 2011; Littin, 2010). This information can then be used to inform decision-making about which actions are morally and ethically permissible. Animal welfare science appraises the wellbeing of animals utilizing both animal-based and resource-based measures such as animal behavior, biology,

physiology, and access to resources. In theory, animal welfare science itself is ethically neutral; the information generated could equally be used to support an argument that no human uses of animals are acceptable because they all cause 'unnecessary' harm as it could be used to permit animal use. It does not address the issue of the *necessity* of harms as this is an ethical, not a scientific question. However, many of the research questions explored are chosen because of a desire by animal welfare scientists to avoid or minimize animal suffering (e.g., Hemsworth et al., 2015; Fraser et al., 1997; Fraser, 1999; Garner, 2013; Mench, 1998).

While a growing number of scientists continue to seek answers to the conservation practitioner's moral dilemma concerning wild animals through a wildlife management philosophy that focuses on the wellbeing of individual animals (akin to the ideology laid out by Bekoff and colleagues in compassionate conservation), a deep division between those who identify primarily with the ethical convictions and policy goals of conservation and those who adopt the ethical view and agenda of animal rights/ welfare remains. These debates have been laid out in recent interchanges in the journal *Conservation Biology*, the flagship journal for conservation science and management in the United states. Some continue to argue for greater cooperation among animal rights supporters and wildlife conservationists pointing out that both groups are committed to promoting animal wellbeing even if they emphasize different understandings of this good. Others emphasize the inability to incorporate an animal rights approach in ecosystem management and to only work within the constraints of an approach that utilizes a philosophy that focuses on a consequentialist/utilitarian approach towards management. While separate from compassionate conservation, the new emerging sub-discipline of "conservation welfare" reflects the relatively recent application of the animal welfare ethic (a consequentialist ethic generally following Singer's utilitarianism), to consider the

effects of conservation activities on free-living individual wild animals. Much of the development in conservation welfare has been driven by concerns about the effects of methods used to control invasive or otherwise unwanted animals through the conservation activities.

Acknowledging that no single foundational principle is likely to fulfill the concerns that involve several levels of biological organization (individuals, populations, ecosystems, biodiversity), animal welfare scientist David Fraser proposed his own practical ethic for animals. His approach incorporates elements of both compassionate conservation and conservation welfare and reflects the pragmatic approach often taken in real-life conservation-welfare conflicts. It is founded on 'mid-level' principles designed to be responsive to people's actual concerns about current problems in the real world and to offer a framework for decision-making that satisfies people's multiple simultaneously held values, e.g., concern for the welfare of individual animals and for safeguarding biodiversity. These principles are: 1) Provide animals with good lives in our care; 2) Treat suffering with compassion; 3) Be mindful of unseen harm; 4) Protect life-sustaining processes and balances of nature (Fraser, 2012).

In developing a proper management plan for wild horses, it is essential to not only recognize the various characterizations of captive and wild animal welfare and the notable contributions offered by animal welfare science, but also include those concepts which fall within the realm of animal rights. These overlapping characterizations (such as affective states which are impacted by the right to autonomy) influence the manner in which animals are assessed as well as how that information is manipulated in policy development and decision-making. Conservation activities will continue to influence not only the habitat and fitness of species, but also the welfare, including affective states, of individual wild animals. Research has

shown that individual animals (e.g., matriarch of chimpanzee family group, wolf pack or orca pod) may affect the ability to thrive for an entire population. Beliefs surrounding animal welfare, in many instances, could be the deciding factor in public approval or complete rejection of management efforts (Safina, 2015; Fraser, 2010; Gamborg et al., 2010; Sandøe & Christiansen, 2008).

Although the incorporation of science in the effort to assess animal welfare has advanced, philosophical interpretations remain divided, particularly among those who have historically felt their voices have not been heard. In response, feminist theorists in the 1980s began to develop a new feminist approach—based on care and interspecies communication—to address the issue of the moral status of animals. Many social learning theories and issues, expressed by numerous female animal activists, are incorporated into the feminist approach of animal welfare and are rooted in “ethic-of-care” theory, as originally articulated in Carol Gilligan’s *A Different Voice* (1982). Gilligan identifies a women’s view of morality as one that is concerned with the activity of care, responsibility and relationships as opposed to a male interpretation which is concerned with “rights and rules” and an abstract idea of justice. The women’s approach offers a more flexible, situational, and particularized ethic, one that shows a concern with animal connections and of maintaining a web of relationships (Gilligan, 1982).

Science, Philosophy and Compassion: Working Towards a Common Goal

This chapter underscores how the emphasis on philosophical differences in the moral concern for wildlife between traditional conservation biologists and proponents of animal rights have historically led to conflict between and among group members and confusion regarding management approaches for both federal agencies and Non-government Organizations (NGOs). Common positions regarding which animals are morally considerable are affected by social and cultural factors

and include those animals with instrumental value to humans (highly varied in terms of iconic wildlife, pests, agricultural or companion animals), sentient animals (those that have a capacity to take an interest in their own lives), and all animals considered equally with humans.

The case against conservation biology's efforts to focus solely on the preservation of collectives (populations and species) is based on the premise that wildlife individuals are viewed and valued as "instances of their type, rather than unique and distinct organisms," akin to Regan's charge of environmental fascism and "the moral atrocities of political regimes that sacrifice or subvert the interests of individuals to promote their vision for the advancement of society" (Wallach, Bekoff, Batavia, et al., 2018, p. 2062). Physical welfare, as recent studies in ethology have revealed, is only part of what constitutes good welfare. Cognitive and emotional capacities must also be included (Bekoff & Pierce, 2017). Conservation biology's aim to control and eradicate introduced populations or species denoted as "Feral," furthermore, displays a nativist orientation⁹⁷ (discussed further in Chapter Five) (M.A. Davis, 2009). Wild horses have been accused of changing the composition and function of ecosystems and of contributing to the decline and extinction of endemic species. Such thinking is characterized by a belief that species belong in the geographic regions in which they evolved or to which they immigrated without the aid of modern humans (Wallach, Bekoff, Batavia, et al., 2018, p. 2062). Humans, through increased globalization, anthropogenic climate change, land-use and conservation practices, have continuously shifted the distribution of species (Finn & Stephens, 2017). Many introduced populations are deemed detrimental, not because of their effects on the environment, but because they challenge long held beliefs about how nature should be (Chew & Hamilton, 2011). As evidenced by the numerous examples in this chapter, our duties to provide moral concern for wildlife

(and wild horses specifically) should not change based on geographic location or former associations with humans. As we will find out in Chapter Five, a nativist approach clouds the issues and leads science down the wrong path by ignoring the capacity for introduced populations to enhance species richness, create unique symbiotic relationships and provide valued ecosystem functions (Sax et al., 2002; Lundgren et al., 2018). Although ecologists today do not dispute the fact that ecological systems are more dynamic and adaptive than previously thought (Pickett, 2013), compassionate conservationists believe that such unwavering dedication to maintaining historic assemblages is naive “and may be rooted more deeply in xenophobic ideology than scientific understanding” (Wallach, Bekoff, Batavia, et al., 2018, p. 2062).

Highlighting differences in our underlying ethics and their practical implications can be beneficial if it improves our understanding of one another. However, focusing on differences (as revealed in the activities of the wild horse advocate and wild horse activist groups) may create situations that isolate and divide groups resulting in a decreased ability to address the same problem. In addition, such focusing on differences and laying blame for our current conservation predicaments, in either philosophy or management approach, undermines academic or public confidence in the work of compassionate conservationists and traditional conservation biology interventions (Hayward et al., 2019). In the long run, researchers, agencies, and NGOs are less effective overall and less open to participating in collective efforts on behalf of wild animals when there is fixation on the differences in philosophical approaches. In contrast, exploring our shared aims can facilitate constructive dialogue and provide for the opportunity for each party to reinforce the other’s actions in the overarching goal of supporting the well-being of wild animals. Many of the tenets of compassionate conservation align with much of

the thinking surrounding the more traditional approach of conservation biology welfare. Compassionate conservation is also allied with those supporting change and increased involvement in wild horse management. At the same time, many of the horse advocates have traditionally felt isolated in their desired management approaches. The fear was that those in power (federal and state land management agencies) assumed their beliefs did not align with science; that they were too emotional and sensitive to the needs of individual animals, and that their opinions would never be accepted. This has led to distrust of management agencies and efforts by advocates to call upon leaders in the field of compassionate conservation to justify their own positions. Other advocates have bowed out of collaborating or have relied on litigation in an effort to remain a “cog in the wheel” in agencies’ attempts to manage wild horses (Hauser [Heber Wild Horse Advocate], personal interview, 2021; Friends of the Heber Wild Horses, Facebook post, 2014). Inclusiveness is key in acknowledging the differences and importance of all views represented in the wild horse management dispute. The main aim is to stimulate discussion among those having concerns about the well-being of both individual wild animals and the collectives and ecosystems to which they belong.

Some argue that all ethics can do is reduce confusion by illuminating the controversial issues or highlighting what is at stake (Callicott, 1988).¹⁰⁶ Although the ethical foundations are fundamentally different, both proponents of conservation biology (USFS and AZ Department of Agriculture) and compassionate conservationists (aligned with animal rights groups and animal welfare groups) in the wild horse management case, focus on consideration of the well-being of wild horses. At the same time, what is considered the right or good thing to do will often differ, with conservation welfarists traditionally focusing on the overall outcomes of decisions (for humans, the environment and animal *populations*) and compassionate

conservationists usually (but not always) emphasizing some collective intent of the action, such as the right to autonomy or the avoidance of killing. It is important to note that neither approach is faultless or sufficient to address the multiple concerns people hold about conservation of nature. The importance of pragmatic and experimental solutions allow for adaptive measures and an increased ability to manage wild horses on a case-by-case basis. While initially the SRWHMG focused on an animal activist approach in their management efforts, their approach has recently begun to align with that of the AZ Department of Agriculture (AZDA) and the USFS due to their increased interaction with the Salt River Wild Horse Liaison and collaborative efforts with both agencies. By backing off of their more hardline approach, they have been allowed to work towards a pragmatic solution (utilizing PZP for fertility control for example) and develop a realistic long term management goal for the horses that includes not only reasonable welfare for the horses, but also care and concern for the environment. In this manner they also gain support and cooperation from both agencies involved in the unique partnership between the USFS, the AZDA and the SRWHMG.

At the same time, AZDA has seen that there is additionally a more pragmatic advantage to the inclusion of animal welfare consideration in conservation efforts. While population-level and ecosystem impacts may take a long time to become apparent, animal welfare can be measured in the short term, enabling more targeted, continuous, early, rapid and effective measures to be taken (Soriano et al., 2017). Thus, better outcomes can be achieved for individuals and their populations. Moreover, such methods can also benefit humans, as they can be less extreme, less expensive, less laborious and less intrusive on the part of humans (Papastavrou et al., 2017). These attributes suggest the case for compassionate conservation be included within the new concept of one welfare, which recognizes the

interconnections between animal welfare, human wellbeing and the environment (Pinillos et al., 2016).

It's crucial that public sector practitioners who care for wild horses removed from U.S. public rangelands and those living in holding facilities awaiting adoption, or agents who manage herds of de-domesticated horses in nature reserves, are provided guidance by both holistic approaches (conservation biology) and individualistic approaches (animal rights/compassionate conservation) (Reed, 2008). Laws strictly prohibiting cruelty to wild horses, including methods of rounding them up and prohibitions against their slaughter are based on claims that as sentient beings, horses deserve consideration of their interest in avoiding pain. The problem is animal welfare laws apply only to horses living in domestic environments and not to so called "feral" or "de-domesticated" or "re-wilded" horses (horses recognized as formerly domesticated and now as "re-introduced" horses they are living autonomous lives). Furthermore, wild horses are becoming progressively dependent on transitional environments, such as Arizona's Salt River Horses, that, due to their intense management may be viewed as neither wild nor domestic. According to Christine Reed, professor of public administration, animal welfarist and author of *Saving the Pryor Mustang: A Legacy of Local and Federal Cooperation*, in many instances, "Advocates for wild horses appear to have lost the scientific argument to the range ecologists" (Reed, 2008, p. 277). Reed further contends that scientific arguments on both ends of the domesticity-wildness spectrum are outdated. Wild animals, particularly feral and de-domesticated horses, survive in natural environments requiring intensive human intervention in order for ecological networks to thrive. At the same time,

The most serious threats to horses awaiting adoption in the United States or learning to live independent of human supervision in nature reserves are not human physical abuse but rather human ignorance about the psycho-social

health of horses in transition from domesticity to wildness and vice versa. New research in animal ethology and revisions to ecology underscore the need for new ethical claims on behalf of wild horses. (Reed, 2008, p. 277)

If an animal welfare issue is detected in wild horse management and intervention is required, the values of different stakeholders should be evaluated. The conservation project must be supervised with scientifically credible monitoring programs and performance indicators measured in order to adapt the project as needed. If violations of the welfare of individuals are expected, clear data are needed on the minimum number of animals affected so that the goal is accomplished. Although welfare rating systems can be adapted from domestic animals and livestock, perhaps the best place for revisions in ethical claims could begin with our ability to determine what constitutes "good welfare" in free-roaming and captive wild horses (Ramp & Bekoff, 2015). This should be aligned with an understanding of the unintended welfare consequences of management decisions based on a philosophy that incorporates an animal rights approach or a philosophy that encompasses a holistic approach towards management.

Chapter Four addresses these issues by diving into the applications of each of the four the tenets of compassionate conservation, the "Five Freedoms" associated with the welfare of captive species, and the philosophical grounding of conservation welfare in an attempt to provide a framework for the welfare of all wild horse populations roaming on public lands in North America. Such knowledge will also provide insight into an understanding of how various stakeholders value of the horse and interpretation of the science used to manage the horse affects their desired management goals. An overarching goal of Chapter Four will be to also draw attention to unintended consequences of adhering to one particular philosophy in wild horse decision making.

CHAPTER FOUR

MANAGING WILD HORSE POPULATIONS: WELFARE AND INVISIBLE HARMS

Many animals experience pain, anxiety and suffering, physically and psychologically, when they are held in captivity or subjected to starvation, social isolation, physical restraint, or painful situations from which they cannot escape. Even if it is not the same experience of pain, anxiety, or suffering undergone by humans- or even other animals, including members of the same species- an individual's pain, suffering, and anxiety matter. (Bekoff, 2007)

Figure 6

Under Drought Conditions Groups, Private Individuals, Permittees, and Arizona Game and Fish Continue to Haul Water to Wildlife, Livestock, and Horses in the Sitgreaves National Forest from Show Low and West to Heber-Overgaard (USFS, 2018).



“Do Nothing” Approach: Freedom to Live a Natural Life

One of the cruelest reminders of increased grazing competition on rangelands and drought's unnerving grasp on the American West was discovered in late spring of 2018, within the lavender shadows of Gray Mountain on the Navajo reservation in Arizona. Partially buried within the chalky desert, the remains of 191 starving horses

in various stages of decomposition were found in a bleak circle around a dry, sunken watering hole. Some were knee deep in mud, others were stacked on top of one another. The fractured landscape offered merely a trickle of water. The public was horrified by the ghastly scene that was revealed in the media. The magnitude of deaths came as Arizona was experiencing a drought unlike anything it had seen in more than a decade. Navajo officials exclaimed that the sight of horses dying near an empty watering pond was “not a new but a seasonal issue” (K. Phillips, 2018). The deaths also drew attention to an overpopulation of free-roaming horses, a conundrum entangled in competing interests, scarcity of resources and Navajo cultural values. According to the BLM, roughly 90,000 horses and burros roam free in the western United States; that number has far exceeded what government officials say the land can sustain. The Navajo Nation, the country’s largest reservation spanning 27,000 square miles in Arizona, Utah and New Mexico, contains upwards of 40,000 wild horses alone. With such a population in fragile ecosystems that contain little water, herds of free-roaming horses have become expensive. Damage caused by the horses cost the Navajo Nation more than \$200,000 a year. According to the Navajo Department of Agriculture, one horse consumes 18 pounds of forage a day. Removing as many as 13 dozen horses would save the Navajo Nation more than 290,000 gallons of water and 1.1 million pounds of forage a year (Fonesca, 2018).

Still, the issue has been contentious. The Navajo tribe reveres horses. Not only are they symbols of the American West, but they are deeply entrenched in the Navajo people’s beliefs and traditions. Many tribe members speak of American Indians’ special relationship with horses, the magnificent four-legged animal who has a part in their creation stories. As recently as the late 1970s, the community around Gray Mountain controlled horse populations by castrating the smaller ones. Navajo culture taught that young men should train horses and tame them as part of building

endurance, a strong work ethic and managing livestock. But times have changed. According to Erny Zah, former Navajo spokesman, "It's a sensitive subject to begin with because horses are considered sacred animals, so you just can't go out and euthanize them. That would go too far against cultural conditions...At the same time, we have a bunch of horses no one is caring for, so it's a delicate balance" (K. Phillips, 2018). Just months previous to the tragedy at Gray Mountain, the Navajo Game Commission had opened up an unprecedented "harvest" to include 60 mustangs. Within 48 hours, it was called off due to protests by animal rights activists. In an email statement, Navajo Nation Speaker Lorenzo Bates said his office was not aware that the executive branch had decided to issue permits for hunting feral horses.

As Navajo people, we are taught to respect all life forms and that includes horses. Considering the cultural and historical factors and concerns over water shortages and overgrazing — this is certainly an issue that should have been brought before Navajo leadership and medicine people to discuss and consider (Fonesca, 2018; Pineo, 2018).

If the hunt had not been rescinded, selected tribal members accompanied by wildlife conservation officers would have been able to harvest non-branded horses that were at least two years old. Mares with foals would have been spared. Some might argue a fate far worse than a hunter's bullet awaited the free-roaming horses of Gray Mountain in the months to come as the debilitating physiological effects of drought continued to mount with rising temperatures.

This is not the first time Navajo leaders have faced resistance in their efforts to control rising numbers of free-roaming horses. In 2013, Navajo leaders drafted a letter to federal officials expressing their support for the slaughtering of horses for export. But former New Mexico governor Bill Richardson, actor Robert Redford and animal rights groups joined in a federal lawsuit to block the revival of

horse slaughtering in the United States. According to Ben Shelly, the Navajo Nation's president, there is a gap between reality and romance when, "outsiders" like Mr. Redford — who counts "The Horse Whisperer" among his movie roles — interpret the struggles of American Indians. "Maybe Robert Redford can come and see what he can do to help us out," Mr. Shelly said in an interview. "I'm ready to go in the direction to keep the horses alive and give them to somebody else, but right now the best alternative is having some sort of slaughter facility to come and do it." In a letter to the House Appropriations Committee, Jefferson Keel, the Navajo National Congress's president and the lieutenant governor of the Chickasaw Nation in Oklahoma, said slaughter plants "represent a viable and humane method of assisting tribes and other entities in this country to stop the detrimental impact of tens of thousands of feral horses on our land." In April of 2018 congressional leaders' decision to reject a proposal allowing the culling of tens of thousands of horses and burros currently roaming the West or being held in government-funded corrals and ranches, was applauded by animal advocacy groups. At the same time, supporters of the proposal were describing it as "humane euthanasia" (K. Phillips, 2018).

Public lands throughout the American West are being hard hit with this repeated, bleak scenario: Too many grazing animals on arid rangelands that cannot support adequate forage. If the past several years is indicative of the future, mass starvation and dehydration will continue. There will never be enough liquid in the parched rangelands of "Wild Horse Country" to satisfy the needs of so many thirsty inhabitants (Phillips, 2017). When a population of herbivores exceeds its food and water resources, individual animals are likely to suffer an increased starvation and dehydration rate. Moreover, such conditions also lead to increased mortality and suffering due to disease, parasitism, and aggression-related injuries (McCullough,

1979; Taylor & Hahn, 1947; Krol, 2019; Cheatum, 1951; Wilson & Hirst, 1977; Streater, 2019).

If a major goal of the animal rights and humane ethic of compassionate conservation is to ease pain and suffering, the question begs: How can such situations be tolerated?

The tools conservation biologists use to manage wild horses constantly introduce a multitude of uncertainties into our understanding of equid physiological condition as well as habitat and ecological systems. To avoid poor welfare and catastrophic mismanagement of resources, it is crucial that we strive toward a deeper understanding of natural processes and ultimately improve our management tools.

Fraser and MacRae (2011) suggest that people affect animals through four broad types of actions: 1) keeping domestic or captive wild animals; 2) causing deliberate harm to wild animals through activities such as hunting, laboratory research or pest control; 3) causing direct but unintended harm to wild animals through motor vehicle accidents or infrastructure such as fencing or wind farms; and 4) harming wild animals indirectly by disturbing ecological systems. Animal welfare appraisals rigorously focus on the first two types of activities – intended and direct effects of management actions on targeted animals – and not how those actions may affect other animals, either unintentionally or indirectly (Fraser & MacRae, 2011; Hampton et al., 2018; Beausoleil & Mellor, 2015). There is increasing concern surrounding the significance of these “invisible harms” or indirect impacts (Finn & Stephens, 2017). Complicating matters further is the fact that all available options to state and federal agencies for the management of over abundant wild horses, according to the animal rights/humane ethic, impose some type of harm on the animals. Although they may be directly harmed through negative welfare states

(e.g., capture stress), they may also be harmed through deprivation of positive welfare states (e.g., wild animals brought into captivity) (Mellor & Beausoleil, 2015).

The Five Freedoms were formulated in the early 1990s and are now well recognized as highly influential in the animal welfare arena (see Chapter Three). However, a marked increase in scientific understanding over the last two decades now shows that the Five Freedoms do not capture, either in the specifics or the generality of their expression, the breadth and depth of current knowledge of the biological processes that are relevant to understanding animal welfare and to guiding its management as it applies to captive and wild species. The Five Freedoms paradigm did not differentiate between the physical/functional (malnutrition, exposure, disease and injury) and affective (thirst, hunger, discomfort, pain, fear and distress) elements of animal welfare. This, and the orientation towards desired states of freedom, hindered use of the Freedoms as a means to coherently and systematically identify and grade different types of negative welfare impact, because the meaning of the notion of “degrees of impaired freedom” was inherently obscure, and therefore lacked utility.

The Five Domains Model for assessing animal welfare compromise, initially applied to animals used in research, teaching and testing, was developed by British Animal ethologist David Mellor and certified animal behaviorist Pamela Reid to address these problems (Mellor & Reid, 1994). Furthermore, it was designed to provide a more thorough, systematic and comprehensive means to assess negative welfare impacts. Taking a predominantly physiological orientation, the Model was structured to first evaluate particular physical/functional disruptions and imbalances, as well as restrictions on behavioral expression, and then to identify the specific negative affects each disruption, imbalance or restriction would be likely to generate. Accordingly, the Model incorporated four predominantly physical/functional domains

of “nutrition”, “environment”, “health” and “behavior”, and a fifth “mental” domain for focusing attention on all of the individual negative affects identified and their accumulated overall impact on welfare. The net affective outcome in the “mental” domain therefore represented the animals’ overall welfare state.

Understanding equid welfare through the “Physical Function Domains” ensures that animals have “lives worth living” by minimizing their negative experiences from poor nutrition, degraded environment, disease or injury, and interference from normal (“wild”) behavior — while also providing the animals with opportunities to have positive experiences. The end goal is to provide for a positive mental state.

To meet conservation objectives (i.e., to maintain an “ecological health” and provide for “multiple use”) on public land within Herd Management Areas and Wild Horse territories, the BLM and USFS utilize a number of objectionable practices that are adamantly opposed by animal rights groups, including: 1) gathering horses, 2) confining horses, 3) fertility control/sterilizing horses and 4) killing Horses. Each method presents negative welfare states that animal activists and many horses advocates deem unsatisfactory (American Wild Horse Campaign, 2020c; Animal Defense Partnership, n.d.; Salt River Wild Horse Management Group, 2022; The Cloud Foundation, 2017; Animal Welfare Institute, 2022).

Freedom from Fear

Gathering horses involves the use of helicopters in the removal of what the BLM considers “excess” horses from the landscape, inducing considerable stress and trauma on the horses, separating family bands, and causing injury or even death: fearful horses have been known to literally run their hooves off or, in a panic, break their necks when trying to escape from the temporary enclosures where they are collected. As the “fight or flight” response kicks in, increased cortisol levels circulate inducing colic (gastrointestinal distress due to impaction of intestines, twisting, gas,

inflammation or uncontrolled contractions) and miscarriages. In cases where herds are small and in confined areas, horses may be lured into corrals through the use of water or food removing many of the injuries, deaths and stress associated with large scale helicopter gathers. Although more appealing, these methods are limited in their scope and practicality for large Herd Management Areas (Nock, 2010).

Figure 7

A Helicopter Guides a Group of Wild Horses into the Wings of the Trap as a Part of the Desatoya Wild Horse Gather (BLM, 2015).



Environmental Enrichment and the Loss of Freedom

Confining Horses requires that wild horses be placed within holding facilities after capture, removing their “wildness” (their right to autonomy) and causing them

to live their lives eternally in a new “domestic” or captive form. Along the way, there are also transfers from one paddock and group to another, and transportation in trailers from one location to another. Since everything is foreign and truly disturbing for a species that depends on familiarity for safety and comfort, sources of stress are presented at every stage. Just as in humans, if the stress response is activated too often or for too long, the physiological responses can be catastrophic.

Figure 8

Wild Horses from Sand Wash Basin at the Cañon City, Colorado Corrals (Neitro, 2021).



Once in captivity, there are numerous unnatural stressors to contend with, especially for a species that depends on running for survival and instinctively avoids places where they feel trapped. These stressors go against some of the most basic instincts of horses and induce the same bodily changes as the ‘chase.’ Confinement forces horses to not only be in close contact with unfamiliar horses, it separates them from lifelong mates. Horses attain social order within a herd by forming a dominance hierarchy through the outcome of agonistic encounters — contests to see which stallion can intimidate or out fight the other. Horses strive for a high rank as it leads to freedom of choice in their ability to roam where they choose and mate with whom they prefer. This freedom of choice, to horses, is worth fighting for. The loss

of control is a powerful psychological stressor and is a key factor in determining whether situations, events and circumstances are stressful and mentally or physically damaging (Nock, 2010). Boredom and a loss of control can lead to stereotypies, repetitive behaviors with no apparent goal or function. Common stereotypies include crib-biting (chewing on portions of fencing, arching neck and inhaling air) weaving, and pacing (Parker, 2019).

The stress response calls for increased energy, which is obtained through catabolic processes. As a result of repeated stress, the protein in muscles breaks down and never fully has the opportunity to recover or rebuild properly. Catabolism can also weaken connective tissues and joints, thin skin and impair wound healing. It may even contribute to the development of laminitis and founder, the destruction of the sensitive, blood-rich laminae that connect the horse's hoof to the soft tissue of the foot. If the stress response is activated too often or for too long, it interferes with bone growth, increases susceptibility to bone injury, slows recovery from bone damage and accelerates osteoporosis. In addition, stress is also a major contributor toward obesity and insulin resistance. An excess amount of nutrients is deposited into the bloodstream to fuel the stress response; however, physical action isn't an appropriate response to the unnatural stressors gathered horses face. Consequently, much of the fuel isn't used and the stress hormone, cortisol, promotes intra-abdominal fat deposition – the type of fat that surrounds internal tissues and organs like the heart, liver and kidneys, inducing all of the problems associated with obesity. Frequent periods of stress over time cause intra-abdominal fat cells to expand to a point where they burst or leak. The cellular debris then sparks an inflammatory response, compromising the horse's ability to fight off and recover from diseases as well as identify and destroy tumors and parasites. Finally, stress and the long-term effects of cortisol has also been known to alter the effect of gene activity. Although

the BLM has hopes that the horses will be adopted, adoption rates have dropped over the years and the number of horses placed within long-term holding facilities continues to increase (Nock, 2010).

The Right to Autonomy: Genetic Concerns

Fertility control entails temporary or permanent sterilization of horses through the use of tubal ligation, castration, chemosterilization or mechanical devices that prevent conception (D.E. Davis, 1961; Johnson & Tait, 1983; Matschke, 1976; Singer, 1975; A.O. Turner, n.d.). Hormone implants and orally administered reproductive inhibitors often require repeated applications, sometimes on a daily basis. In addition, these methods can have many deleterious side effects (Matschke, 1977b; Matschke, 1977a; Matschke, 1980; Remfrey, 1978; Seal et al., 1976). Methods involving surgical procedures may lead to infection or death (Zwank, 1981). For example, permanent sterilization through painful and dangerous ovariectomies (via colpotomy) requires surgery where a veterinarian blindly sticks his hand and arm into a female horse's abdomen through an incision in the vaginal wall. Then, using a tool with a chain on the end, he manually twists and severs the ovaries bringing them out through the vagina. This is all done without proper pain management. Scientists have warned against this type of procedure. In 2013, the National Academy of Sciences (NAS), the nation's leading scientific body stated in its report to BLM: "The possibility that ovariectomy may be followed by prolonged bleeding or peritoneal infection makes it inadvisable for field application." The NAS further warned that conduct of the procedure on wild (vs. domestic) horses could cause the "mortality rate to be higher than the 1% reported in the published literature" and stated that proposals for less invasive sterilization methods "would be safer – with less risk of hemorrhage and evisceration – and probably less painful" (NRC, 2013). In its public comments on an Environment Assessment addressed to

the BLM, the American Wild Horse Campaign interviewed several prominent veterinarian professionals. Expert equine veterinarian Dr. Don Moore stated in correspondence with the organization that many professional veterinarians would not even consider ovariectomy via colpotomy as an option:

Any veterinarian(s) who would perform these experiments is in violation of the oath taken as a graduating veterinarian, 'above all else, do no harm.' If a veterinarian in private practice performed these procedures in the manner described in [the EA], they would most certainly be reported to and disciplined by the regulatory board of that state. Disciplined would likely mean suspension of that veterinarian's license to practice in that state. (Montgomery Creek Ranch, n.d.)

Temporary fertility control methods via the use of Porcine Zona Pellucida or GonaCon must be administered roughly once a year through hand injection, jab stick or through darting. Porcine Zona Pellucida (developed from pig ovum) renders the mare's egg unreceptive to sperm. The GonaCon-Equine vaccine stimulates the production of antibodies that bind to the gonadotropin-releasing hormone (GnRH) in an animal's body. GnRH signals the production of sex hormones (e.g., estrogen, progesterone and testosterone). By binding to GnRH, the antibodies reduce GnRH's ability to stimulate the release of these sex hormones. All sexual activity is decreased, and animals remain in a nonreproductive state as long as a sufficient level of antibody activity is present. Although this method is tolerated by the Humane society, animal rights-oriented horse advocacy organizations (e.g., American Wild Horse Campaign, Cloud foundation) oppose all methods of sterilization. Simply put, these horse advocate groups are of the mindset that sterilization will take the wild out of wild horses (Montgomery Creek Ranch, n.d.). Such sterilization of wild horses would extinguish the production of the reproductive hormones that drive natural behaviors. Furthermore, in the perception of horse advocate groups, these natural behaviors distinguish wild horses from domestic horses, are central to their complex social dynamics and help them survive in their

rugged high desert homes (Montgomery Creek Ranch, n.d.). In 2013, the NAS reported that surgical sterilization on wild horses would result in a loss of behaviors necessary for maintenance of social organization, band integrity, and expression of a natural behavior repertoire. Dr. Allen T. Rutberg, a faculty member at the Tufts/Cummings School of Veterinary Medicine and a wildlife biologist and researcher who has extensively studied wild horse behavior, echoed the NAS, describing the injurious effects of sterilization on the natural free-roaming and social behaviors of our wild herds.

Wild horses typically live in reproductive bands consisting of adult mares, their dependent offspring, and one or more stallions who[se] lives revolve around trying to protect mares from harassment by other stallions and securing exclusive reproductive access to the mares for themselves; ...mares, meanwhile, simultaneously bond to one another and compete with each other for access to water, food, and other resources for themselves and their foals. Neither geldings nor spayed mares participate in these fundamental processes of wild horse behavior. (A.O. Turner, n.d.)

Although animal rights groups may object, wild horses have proven to be exceptional candidates for reproductive prevention. Horses are highly polygynous, and a single stallion may mate with from two to eleven mares. Because stallions exuberantly defend their harems, the use of chemosterilants can have a considerable effect on reproduction rate. One study obtained an 80% decrease in births by administering long-acting antifertility drugs to specific males (Hutchins et al., 1982). At the same time, however, reproductive inhibition is a gradual rather than a rapid method of control. Environmental degradation can therefore be expected to continue until population size eventually decreases as a result of natural mortality (Hampton et al., 2018; Kasperbauer & Sandøe, 2015). Thus, from the perspective of the environmental/conservation ethic, fertility control may be a case of "too little, too late," especially when dealing with long-lived animals that have relatively low mortality rates. By the time population growth can be reduced, irreparable environmental changes may have already taken place.

The killing of horses, as mentioned earlier, is, under no circumstances acceptable under animal rights philosophy. Animal rights activists as well as supporters of compassionate conservation contend that slaughtering wild horses should be considered an animal welfare impact in the way in which it deprives the animals of a future life where positive states may outweigh negative states. It is important to note, however, that the extent to which loss of life can be considered a welfare problem is debated. Under consequentialist approaches, contentious actions, such as killing, are sometimes considered ethically permissible if, when compared with alternative actions, they deliver a better balance of positive versus negative effects. These positive effects may be reduced suffering at an individual animal level (euthanasia), reduced negative impacts on ecosystems, reduced vehicle collisions, and desirable outcomes for other animals, either agricultural or wild heterospecifics (e.g., reduced transmission of disease). So far, consequentialist arguments, with a focus on animal welfare, have been made to defend the use of lethal culling of carnivores in some situations (e.g., island conservation), but there has been less focus on management of herbivores, with notable exceptions (such as the advancement of the concept of "therapeutic hunting") (Hampton et al., 2018; Gamborg et al., 2012; Dubois et al., 2017; Wilson et al., 2015; Howland et al., 2014; DeNicola & Williams, 2008; Russell et al., 2016; Varner, 2011). The culling of wild animal populations is a particularly sensitive issue for proponents of both the animal rights/humane and environmental/conservation ethics. Though their reasons may differ, proponents of both ethics are strongly opposed to the senseless killing of non-human animals (Hutchins & Wemmer, 1986).

What should be done, then, in those situations where animals become too numerous for their own good, or for the good of the population, species, or ecosystem as a whole?

Philosopher Tom Regan has stated that "With regard to wild animals, the policy recommended by the rights view is: "let them be!" (Regan, 2004/1983, p. 361). The philosophy surrounding compassionate conservation would also seem to support any method that prevents killing or harming animals.

But what are the consequences of such inaction?

As Soulé and Wilcox have pointed out, "Death is one thing; An end to birth is something else" (Soulé & Wilcox, 1980, p. 8). In fact, if animal rights/welfare advocates are unwilling to broaden their perspective to encompass the whole of nature, they will risk a total alienation of the environmental community. Moreover, "in adhering to a philosophy that emphasizes a reverence for life, but that ignores the conditions necessary for its survival, they may ultimately be unfaithful to their own ideals" (Hutchins et al., 1982, p. 333). A conviction that protects a well-meaning person's conscience may in fact be responsible for a greater suffering unknown to him or her (Streater, 2019; Callicott, 1980).

According to conservation scientists Michael Hutchins and Christen Wemmer, non-interventional management policies could actually conflict with the rights ethic, or at least create that perception in the public mind, despite Regan's plea that wild animals be left alone (Hutchins & Wemmer, 1986). If we are to accept the suggestion that all sentient beings have a right to life, then the rational assumption is that we should intervene in those cases in which sentient animals are suffering from starvation or disease. Animal rights/welfare organizations, in fact, are generally among the first to recommend supplemental feeding for undernourished wild animals" (Salt River Horse Management Group, 2022). As illustrated in the case of the stranded foal along the banks of the Salt River, animal rights groups also wholeheartedly support rescue and prevention of death due to *natural* causes as well. The grim site of 191 dead horses at Gray Mountain had a glimmer of hope when

one Navajo official found a three-week-old foal walking around her presumed mother's dead body. Tribal officials carried it to a truck and used a long-sleeved, white T-shirt to keep it warm for the trip to a veterinary clinic 45 minutes away. They named her Grace (Fonesca, 2018).

Such actions, however, are in direct conflict with the environmental/conservation ethic. Supplemental feeding, for example, may increase the probability that animal populations will eventually exceed their food resources (W.L. Robinson et al., 1980). Furthermore, by concentrating the animals at feeding stations, such practices may also increase the incidence of disease, or intensify rates of habitat alteration (Madson, 1986). A case in point was the outbreak of Strangles (also known as equine distemper, caused by *Streptococcus equi*) reported in the summer of 2019 by horse advocates and local cowboys after noticing abscesses on the heads and necks of over 45 horses along the banks of the Salt River. This occurred after weeks of hauling water to water troughs and supplemental feeding due to severe drought conditions. The bacteria can live for 30-40 days in infected water troughs-and for a week in soil and it is suspected that the increased concentrations of horses in these areas might have heightened susceptibility to the disease. Although horses typically recover on their own within a couple of weeks, the infection is quite painful and can be deadly. The lesions were also a gruesome concern for the public (Hughes [Salt River Wild Horse Liaison], personal interview, 2019).

The obvious risk involved in a "hands-off" policy supported by a deontological or compassionate approach, as argued by Hampton et al. (2018), is that short-sighted empathy can lead to much greater suffering, not only for the animals of interest, but also for the ecological community as a whole. Thus, if a population of herbivores becomes so numerous that it degrades its habitat, many other organisms

may suffer as well. They further contend that, from a consequentialist perspective, consumptive in-situ killing (on-site harvesting of animals to be utilized as food) effectively reduces abundance and will often yield the best animal welfare outcomes for overabundant wild herbivore management. Their conclusion is based on six advantages this policy offers: 1) negative welfare states imposed on animals being killed last only a short time (as opposed to the slow and painful death of dehydration and starvation or even transport to slaughter houses); 2) remaining animals are not deprived of positive welfare states (e.g., linked to rearing offspring); 3) poor welfare states of animals in overabundant populations (e.g., starvation, increased disease and parasites) are avoided; 4) negative welfare impacts on other wild animals by overabundant animals through resource depletion (i.e., competition) are prevented; 5) harvesting meat reduces the number of (agricultural) animals raised to supply meat; and 6) minimal costs or income generation maximizes funding available for other animal welfare or conservation priorities (Hampton et al., 2018).

Many ethical approaches, including deontological and virtue ethics, diverge from welfare consequentialism regarding the assessment of killing animals as discussed above (Palmer et al., 2018). Alternatives to lethal control (often no management) or practices such as fertility control or guardian animals (guard dogs to watch over flocks) are typically favored by these positions (Wallach, Bekoff, Batavia, et al., 2018). Regardless of their ethical origin, these seem primarily to consider animal welfare by discouraging deliberate killing. Hampton et al. assert that these approaches take too narrow a view of animal welfare by not giving sufficient weight to indirect and unintentional harms. Such approaches focus on the plight of animals intentionally affected by human intervention at the cost of considering welfare outcomes for animals affected in a more indirect way (Hampton et al., 2018).

The debate as to whether or not compassionate conservation has gone too far in its efforts to safeguard against any killing of animal, to the detriment of others, continues to escalate. Conservation ecologist Matt Hayward et al. argue:

Conservation that is adaptive and flexible under each unique situation is likely to deliver greater animal welfare gains than hard and fast rules driven by emotion or ideology. In response to such concerns, advocates of compassionate conservation may resort to virtue ethics, claiming it is sufficient to manifest the virtue of compassion by letting the animals interact without human intervention. However, this dialectic in reasoning ignores the fact that more individuals will be harmed without lethal control (i.e., fewer individuals die a less painful death if one follows mainstream conservation practice). (Hayward et al., 2019, p. 765)

The accusation that conservation biologists' efforts have not been compassionate is also being disputed. Invasive biologist Peter Fleming reported to the invasive species council in 2018:

It would be safe to assume that most conservationists are compassionate – without compassion for the living world they would not be interested in conserving it. Compassionate Conservation has the capacity to do harm to the cause of conservation in Australia and elsewhere because it has little foundation in biology. It is animal liberation dressed up as conservation science. Sometimes it is more ethical to kill animals than not to. Conservation of individuals, species and ecosystems often depends on that ethic. When you must kill individuals of one species to preserve the very existence of another species and prevent it from careering or staggering to extinction, it is a moral act. To stand by and watch extinction happen in the guise of compassion is reprehensible. (P.J. Fleming, 2018, p. 1)

In order to develop a proper ethic for management for wild horses, an understanding of the direct as well as indirect harms surrounding welfare concerns of wild horses must be addressed. By considering animal welfare alongside animal conservation it becomes possible to establish wildlife management frameworks that are explicitly oriented toward the lives of individuals and their social groups and not just the species or population as a whole (Fraser, 2010).

This should consist of a pragmatic approach that includes a thorough case-by-case exploration of the physiological as well as the cognitive needs of horses in their natural and captive environments. Physiological needs should involve scientific

methods to determine what constitutes “overpopulation” of wild herbivores, the influence of distinctive environments on equid diet and availability of water, suitable genetic diversity to maintain vigor within the herd and the pros and cons of horse grazing on various landscapes to include interactions with all affected species. Cognitive needs should utilize science to address the effect of fertility control on social behavior, the effect of humans on social behavior (including supplemental feeding or other handling), and the influence of capture and confinement on stress levels.

Being mindful of the public’s concerns for individual horses can only be addressed by acknowledging *where* horses belong and *why* they belong. Chapter Five will explore these issues as well as the debate surrounding the science used to determine such belongingness.

CHAPTER FIVE

CONTROLLING NATURE: REWILDING UNCERTAIN FUTURES

To make good environmental decisions, we must stop focusing on trying to remove or undo human influence, on turning back time or freezing the non-human world in amber. We must instead acknowledge the extent to which we have influenced our current world and take some responsibility for its future trajectory...We should not seek to carefully control every plant and animal on the planet. We couldn't even if we wanted to. (Marris, 2021)

We in the fish and wildlife profession must ask ourselves, "Are we still relevant to the people we serve?" If the answer to that question is "no" or "maybe," then we may need to seriously evaluate what we are doing, how we are doing it, and for whom we are doing it. (Ed Carter in Sullivan et al., 2022, p. 1)

Figure 9

Horses Graze Peacefully in a Pasture in Riverside, Wa, Despite the Rapid Approach of Flames and Heavy Smoke from the Tunk Block Portion of the Okanogan Wildfire (Reichner, 2015).



In the summer of 2021, a menacing inferno loomed for two months over Northern California — stripping forests, and forcing thousands from their place of residence as it destroyed more than 1,300 structures, including over 700 homes. Although government agencies doled out roughly \$540 million to battle the blazes,

the Dixie fire – as it came to be known – tragically burned more than 1,500 square miles, and nearly obliterated the historic town mining town of Greenville. Much like hurricanes in the south, the West has seen a steady increase in wildfires such as the Dixie. The socioeconomic impacts from wildfires – loss of life, property, impact on natural resources, impact on health and healthcare, economic impacts on business, property and tourism – has been catastrophic, with total losses in the billions of dollars annually. The heightened intensity and amount of heat these devastating wildfires generate have been attributed to the effects of climate change and the depletion of natural herbivory and subsequent development of immense overgrowth of grass and brush wildfire fuel across the landscape. Adding to the concerns of the rise in flammable plant biomass is the lack of fire suppression resources and funding available to battle the increasing risks and intensity of these wildfires (Dong et al., 2021; Fimbrite, 2010; Fountain, 2021).

A huge factor contributing to the impairment of the delicate balance of forest and grassland ecosystems over the past five decades has been the reduction of millions of deer in the western states (Webb, 2019). California’s deer population alone – estimated to have abated approximately 2.6 million tons of annual grass and brush -- has decreased by approximately 2 million animals over the past fifty years (O’Neill, 2022). This is in addition to the long-term loss of approximately 300-million large-bodied herbivores on the North American landscape over the past 300 years, which controlled wildfire fuels for millennia (Johnson et al., 2018). Paleoecological studies reveal that large wild herbivores maintained a high level of disturbance that contributed to grass-dominated, heterogeneous ecosystems with a higher frequency of low-intensity fires. The extinction of these mega-herbivores in North America at the end of the Pleistocene was followed by a shift from fire regimes with frequent, low fire intensity to high-intensity crown fires. As a consequence of the absence of

these mega-herbivores, wildfires have become an increasing concern worldwide with large impacts on nature, including the loss of native vegetation, expansion of invasive species, disappearance of essential wildlife habitat, and the emission of about 8 billion metric tons of CO₂ per year globally. Future climate change will likely continue to increase drought conditions with severely hotter, drier weather, thereby increasing fire events, particularly in high latitude regions that currently do not experience many wildfires (Pausas & Keeley, 2014; Fuhlendorf et al., 2009; van der Werf et al., 2017).

The proposal to reinstate mega-herbivores as “ecosystem engineers” has recently coincided with the need to diminish the intensity of wildfires worldwide. Ecosystem engineers are generally accepted as organisms that directly or indirectly modulate the availability of resources to other species by causing physical state changes in biotic or abiotic materials. In so doing, they modify, maintain and create habitats. Such fuel reduction by herbivores provides a promising management strategy to avoid fuel build-up and mitigate wildfires. Unfortunately, ecologists have projected that it will take decades to reestablish native deer as wildfire grazers in western regions of the U.S.

In an effort to provide a potential solution for decreasing wildfire intensities, supporters of equid rewilding have come together to form an advocacy group known as the ‘Wild Horse Fire Brigade.’ This group aims to relocate wild horses and burros away from areas of competition with livestock enterprises (e.g., BLM Herd Management Areas) and “back into their evolutionary roles of reducing grass and brush fuel loading in remote wilderness areas that are prone to catastrophic wildfires.” Incorporated into the Wild Horse Fire Brigade doctrine is the belief that rewilding remote wilderness areas with wild horses could end the ‘Range Wars’ (competition for forage resources from livestock grazers and other herbivores) and

eliminate the need for the perceived brutal roundups and artificial intervention into wild horse and burro ecology using fertility control measures such as Porcine zona pellucida or GonaCon.

Proponents of equid rewilding are of the opinion that domestic livestock (cattle) grazing across the landscape is largely inadequate to make up for depleted natural herbivory. Furthermore, wildlife managers, in their view, have unknowingly allocated an unsuitable herbivore into inappropriate areas on the landscape. In addition, low-intensity prescribed burns, which have long been presumed by scientists and resource managers to be harmless to soils and an efficient manner to keep fuel loads down, have recently been shown to cause damage to soil structure and organic matter in ways that are not immediately apparent after a fire (Desert Research Institute 2018; Simpson, 2019). In the view of the Wild Horse Fire Brigade and its supporters, there are numerous benefits surrounding the use of equids as ecosystem engineers (as opposed to cattle) in areas with a high propensity towards intense wildfires, namely, cattle lack the presence of upper incisors and consequently tear up the roots of grasses along with clumps of dirt resulting in a destabilization of soils. Horses, on the other hand, chomp grass from the top, allowing it to grow back quickly. The equid hindgut digestive system permits grasses to pass through quickly, without being as fully digested, as in the case of cattle and other ruminants (Simpson, 2019; King et al 2019). Opponents of equid rewilding, however, claim this digestive strategy increases the spread of invasive species, such as cheatgrass (Porter [rancher], personal interview, 2018). Unlike cattle, horses eat saplings, consequently contributing to a decrease in the ability of forested areas to take over grassland ecosystems. Although forests remove carbon from the atmosphere, wildfires release it back into the atmosphere. Grasses, on the other hand, lock CO₂ in their root systems. And finally, equids have the ability to reach all areas of high fuel loads as

they can scale foothills and rocky outcroppings and easily ford streams. Cattle would struggle to do the same (Simpson, 2019).

At the same time, in its recent (2021) request to Congress for an additional \$35 million for wild horse and burro eradication efforts, the BLM reported that such funds are necessary to reduce the impacts of climate change and the growing threats of wildfires *caused* by wild horses. "Excess wild horse and burro populations undermine the health of public rangelands, undoing years of BLM investments and making the public lands less resilient to other stressors such as climate change" (Simpson, 2019).

Wild-horse advocate, ecologist and author Craig C. Downer, who has done extensive field studies in support of the animal welfare organization Friends of Animals' legal actions to protect wild horses, has long called for the BLM to research wild horses' elimination of dry flammable vegetation and consequent prevention of catastrophic, excessively damaging fires, as well as how wild horse droppings help build more moist and nutrient-rich, humus-containing soil, a soil with greater texture and absorptivity. In Downer's view, many of these positive contributions have been ignored by the BLM and, when brought up, are denied by established interest groups (namely ranchers and hunters) (Downer, 2014).

In the view of wild horse advocates Friends of Animals, the BLM takes a "see-no-evil" approach to scrutinizing the real perpetrators of the damage to U.S. rangelands: the livestock industry. A decade ago, the BLM conducted Rapid Ecoregional Assessments in each of the six main regions covering the vast sagebrush West in order to map ecological trends. A key task was choosing the "change agents" (such as fire or invasive species) which would be studied. According to a scientific integrity complaint filed by the watchdog group PEER (Public Employees for Environmental Responsibility), the BLM directed scientists to exclude livestock

grazing as a possible factor in changing landscapes due to anxiety from 'stakeholders,' fear of litigation and, lack of available data on grazing impacts (Simpson, 2019).

A thorough understanding of ecosystem functioning is necessary to also highlight that, while herbivore grazing can maintain grass dominated ecosystems that favor low-intensity fires and reduce frequency, *intensive* grazing (by any ungulate) can have the *opposite* effect by reducing the cover of grassy vegetation and favoring recruitment of highly flammable woody vegetation (Rouet-Leduc et al., 2021). Thus, the ability of herbivores to reduce fire frequency is dependent on season, intensity of grazing or landscape type. Additionally, mixed herbivore systems may lead to stronger reductions in fuel loads than single herbivore systems, especially in a mosaic landscape with high vegetation heterogeneity, and when different animals vary in dietary preferences (Kramer et al., 2003; Pausas & Keeley, 2014; Bachelet et al., 2000). This has been reported to be the case in African savannas, where more diverse herbivore assemblages consume more plant biomass. Similarly, in savannas, multiple species of herbivores with different body sizes and eating habits interact and have the effect of creating more patchiness and smaller burnt areas (Gambiza et al., 2008; Waldram et al., 2008; van der Plas et al., 2016).

It would appear, given the opportunity, that equid and bovine species could potentially provide beneficial ecological effects as sympatric herbivores by fulfilling unique roles on the landscape. At the same time, a crucial impact on *other* sympatric herbivore prey species needs to be further examined before jumping to such conclusions. As wildlife biologist Heather Johnson and colleagues noted, predation can disproportionately affect endangered prey populations when generalist predators (such as mountain lions) are numerically linked to more abundant primary prey. 'Apparent competition,' the term for this phenomenon, has been increasingly

implicated in the decline of Bighorn sheep in the Sierra Nevada and possibly linked to the decline of deer populations in California as well (Johnson et al., 2013). Equid rewilding could have the same effect, resulting in increased predation by mountain lions on the smaller, more easily accessible black tailed deer population (Turner et al., 1992).

With such contrasting views and interpretation of the ecological science surrounding the role of wild horses on the landscape, could a rewilding agenda for wild horses, such as that presented by the Wild Horse Fire Brigade, align with present day socio-ecological concerns? How might current policy incorporate or inhibit such an approach?

Chapter Five seeks to answer these questions by examining the diversity of ecological goals that conservation biologists and land management agencies have for the protection of wildlife and the habitat they roam. The discourse involving various management agendas arises from issues surrounding the proper intensity or the extent of human involvement, as well as the ethical consideration of duties required at each level of management – whether that be at the individual animal, population, species, and/or ecosystem level. Further issues revolve around the baseline for what that ecosystem should look like and the desired trajectory or as a result of management actions (Jepson & Blythe, 2020). Site management under current U.S. policies (e.g., The U.S. Endangered Species Act, Federal Land Policy Management Act, Public Range Improvement Act), may be directed toward one or more of the following: maximizing biological diversity (biodiversity) or biological integrity; protecting a particular species or subset of species; restoring a past ecological community; maintaining or enhancing ecological (ecosystem) services; providing a platform for sustainable development (e.g. enhanced tourism resources, sustainable extraction, etc.); or increasing ecosystem health (Gilson et al., 2011).

On-the-ground conservation decisions depend, to a large extent, on the underlying objectives and values of the organizations or individuals involved. These values and objectives are, in turn, shaped by perceptions of ecosystems as either stable balanced entities or, alternatively, as dynamic systems in flux (Noss, 1990). The former perception is linked to the so-called 'balance of nature' paradigm in ecology, and within conservation biology, is aligned with a compositionalist perspective (Noss, 1990; Callicott et al., 1999). The flux of nature paradigm is strongly associated with a greater emphasis on functionalism (see Chapter One). Neither compositionalist nor functionalist approaches are without shortcomings. A pure functionalist approach may lead to many rare or endangered species being replaced by 'weedy (invasive) species that occupy the same role within the ecosystem. On the other hand, a compositionalist approach, by largely ignoring process, may require huge and continuing investment of resources to maintain the desired assemblages (Jepson & Blythe, 2020).

In this chapter I will examine the debate between these two contrasting viewpoints – compositionalist and functionalists – with particular focus on the baselines or benchmarks against which conservation goals are measured. A compositionalist approach toward management utilized in current U.S. policy, which focuses on native/non-native species and traditional restoration efforts, ignores a place for management of so called "non-native," "feral" horses. A functionalist approach that envisions organisms as ecosystem engineers and is incorporated into rewilding efforts is adaptive and is more flexible in the desired ecosystem outcome. Such an approach allows for a role for wild horses on the landscape.

Ecosystem Composition and Function

In recent decades, there has been something of a paradigm shift in ecology, from a compositionalist (an equilibrium or 'balance of nature') world view, to one of

nature in flux, or not at equilibrium (as seen in a functionalist approach). This shift in perspective has profound implications for the way ecosystems are understood and managed. The equilibrium paradigm dominated ecology for most of the 20th century, but its origins can be traced far back in time to ancient Greek and Judeo-Christian traditions. Nature was conceptualized as a stable and unchanging entity, a view that supported influential ecological ideas such as the climatic climax, the logistic growth equation and ideas of carrying capacity (Gillson et al., 2011). These seemingly distinct and unrelated ideas describe vegetation assemblages and populations as homeostatic systems that respond to disturbance by returning to a pre-determined state, through a predictable series of changes. In the climatic climax, for example, vegetation types can be predicted according to climatic factors such as rainfall and temperature – a view later modified to incorporate finer scale patterns as a function of soil type and geology (Clements, 1936). Following disturbance, ecosystems would progress through several stages to a defined end point, the climax community. Likewise, the logistic curve explains exponential population increase in response to a constant supply of resources, until a point of inflection where organisms compete for resources. Competition increases as population size grows, until resources are consumed at the same rate as they are supplied; at this point, birth rate and death rate become equal, and the population stabilizes at ecological carrying capacity. The carrying capacity model dominated stock management and resource harvesting for much of the 20th century. The way stocking rates were determined was based on carrying capacities of different range types, and wild populations were harvested with the aim of maintaining maximum population growth (Kingsland, 1982).

The strength of the climax theory is that it captures the idea that climate is indeed a major determinant of vegetation type. At least at the biome scale, climate regulates the distribution of deserts, rain forests, savannas and other vegetation

types. Similarly, carrying capacities for stocking rates and harvest levels can be partially effective because resources and reproductive rates are finite, and an upper limit for livestock density or the harvesting of wild populations has sometimes proved valuable in preventing over-exploitation and degradation of rangelands (Kingsland, 1982).

In parallel to the dominant ideas of balance and equilibrium, other ecologists pursued ideas of ecosystem change and landscape dynamics. As early as 1930, English animal ecologist Charles Elton asserted that 'the balance of nature' does not exist and perhaps never has existed (Elton, 1930). Elton's belief arose from his understanding of the complexity and vigor of biological and environmental variables, leading him to believe that change, rather than stability, was the norm for natural systems.

Due to increased concerns surrounding climate change and increasing numbers of novel ecosystems that no longer retain the resemblance of conservation biology's baseline of past ecosystems, confusion and debate over the importance of the protection of native over non-native species has led to the need for a new approach in conservation biology (Jepson & Blythe 2020). The persistent belief, over the past several decades, that various components of the ecosystem (i.e., 'non-native' species) have driven highly valued 'native' species to extinction and contaminated 'natural' environments and the proper functioning of ecosystems, has contributed to the creation of a prevalent bias against these supposed 'non-natural', 'alien' or 'feral' species (Guiaşu & Tindale, 2018). According to invasion biologists David Richardson and Ecologist Petr Pysek (2008), this line of thinking was rediscovered in Elton's 1958 book *The Ecology of Invasions by Animals and Plants* (Elton, 1958). While it has been embraced by certain members of the public, conservationists, land managers and policymakers, such ideas are vehemently

rejected by compassionate conservationists, animal rights activists and wild horse advocates (Wild Horse Education, n.d.; Wallach, Bekoff, Batavia, et al., 2018). Invasion biologists James Russell and Tim Blackburn (2017) assert that critics of invasion biology are engaging in “science denialism.” This claim has been vigorously disputed by a number of experts who suggest that the accusation made by Russell and Blackburn is unfounded and could be perceived as an attempt to shut down legitimate debates (Crowley et al., 2017; Davis, Chew, et al., 2011; Davis & Chew, 2018; Tassin et al., 2017).

From a social perspective, cultural landscapes – and restoration as a social, cultural and ecological practice – are becoming increasingly important (Jepson & Blythe, 2020). Models of ecological restoration based on the untrodden wilderness of post-settlement North America are giving way to restoration objectives that (under certain circumstances) focus on sustainable *human* practices. As ecosystems change, so too do people’s beliefs about the value of those ecosystems. A case in point is the acceptance of increased human-managed and contrived ecosystems and landscapes as a result of a heightened desire to view free roaming horses along the Salt River in Arizona and the exclusion of livestock grazing in these same areas (Salt River Wild Horse Management Group, 2022). While the concept of ecosystem services (amenities derived from an ecosystem that benefit humans) is gaining footing in ecological restoration, there is some danger that such an approach – even one that includes non-monetized values such as ‘recreational value’ – may reinforce an increasingly commodity oriented view of the world. A focus on ecosystem services may also downplay the importance of ecosystem elements that do not clearly support or enrich material human interests (Kosoy & Corbera, 2010; Higgs et al., 2014; Cole & Yung, 2010; Aronson et al., 2007).

In response to the rejection of the orthodox thinking about non-native species as inherent ecological threats, conservation biologists and other naturalists have been compelled to propose innovative approaches, which move beyond the protection of well-preserved nature and also lessen pressures by restoring biodiversity in threatened areas (Jepson & Blythe, 2020). Amidst this backdrop, the concept of 'rewilding' has evolved with the goal of alleviating the current extinction crisis, the growing concern surrounding damaged or degraded environments, and – in the case of wild horses – the current inability to provide acceptable habitat for large herbivores to roam and act as re-shapers of the ecosystem and its various functions – in other words, to perform the role of 'ecosystem engineers' (Jepson & Blythe, 2020; Simpson, 2019). The narrative supporting the scientific basis of rewilding practice – and the value of ecosystem engineers – focuses on a functionalist approach by highlighting the connections between the biological and the physical (abiotic) components of an ecosystem and the properties that *emerge* from these relationships (Noss, 1990; Callicott et al., 1999; Jepson & Blythe, 2020). Rewilding builds on the authority of Charles Darwin's evolutionary theory and the understanding that interactions between organisms and their environment drive the evolution of physical and behavioral traits; for example, large body size, or secretive behaviors to avoid predation, or spines and thorns in protection against browsing (Jepson & Blythe, 2020). However, functional ecology goes beyond evolutionary biology and seeks to understand the role of different ecosystem components in the *creation of* flows of energy, water, gases, nutrients and organisms; the processes that are vital to the functioning of an ecosystem (Jepson & Blythe, 2020).

As ecologists Paul Jepson and Caine Blythe illustrate in their recently published book *Rewilding: The radical new science of ecological recovery*, (2020) rewilding may predominantly be viewed as a form of ecological restoration that seeks

inspiration from ecological histories in order to set a new conservation goal for the 21st century. Although it bears some resemblance to the discipline of traditional restoration ecology, it differs in philosophy and focus. While restoration has typically focused on the recovery of plant communities, rewilding has drawn attention to animals, particularly large carnivores and large herbivores. Rewilding is *not* about turning back the clock and restoring degraded ecosystems to an arbitrary past baseline. Instead, it is about restoring associations of interactions between communities of organisms and their physical environment, along with the ecological processes that emerge from these interactions. It is more open-ended and flexible with regard to ecological novelty. It supports the thinking that there may be no way back for ecosystems because, as ecological interactions and processes recover, emerging ecosystems attain *new* evolving characteristics. The resulting novel ecosystems may have some similarities to those of the past, but they will *not* be the same (Jepson & Blythe, 2020).

A chief goal for many rewilders is the enhancement of ecosystems that draw on support from multi-disciplines, such as paleoecology, sociology, behavioral ecology and psychology. This will not only bring about broader ecological recovery but will help guide societies towards more sustainable and livable futures and will provide an opportunity to reconnect a wilder nature with modern society. In this way, nature is viewed as an ally in solving modern socio-economic issues (Jepson & Blythe, 2020). This shift in narrative from nature *protection* as an obligation to nature *recovery* using rewilding approaches as a solution is attracting interest not only from the scientific community (F. Vera, 2009), but also from legislators and stakeholders involved in the wild horse management dispute (Simpson, 2017). In the minds of its supporters, rewilding represents a promising approach towards enhancing biodiversity as well as ecological resilience (the capacity of

an ecosystem to respond to a perturbation or disturbance by resisting damage and recovering quickly). It has also been heralded as a hypothetically cost-effective solution to reinstate vegetation succession and restore top-down trophic interactions and predation processes through the introduction of ecosystem engineers (Jepson & Blythe, 2020).

At the same time, opponents of rewilding are questioning its conceptual foundations as being based on a confusing concept with inconsistent conservation targets (Jepson & Blythe, 2020). Furthermore, it has been argued that rewilding can be harmful for biodiversity conservation because introducing novel species has uncertain and potentially disastrous consequences for native ecosystems. Besides the familiar method of reintroducing animals in areas where populations have decreased dramatically or even gone extinct, rewilders also employ more controversial methods, including back breeding to restore wild traits in domesticated species, taxon substitution to replace extinct species by closely related species with similar roles within an ecosystem, and the desire to implement the concept of de-extinction in order to bring extinct species back to life again using advanced biotechnological technologies such as cloning and gene editing (Zimov, 2005; Foreman, 2004; Jepson & Blythe, 2020).

No doubt, the methods and fundamental goals of biological conservation will continue to invite intense debate. Rewilding success will therefore require a thorough understanding of ecosystem structural design and ecological processes, including the significance and role of 'naturalness' in conservation biology. Some claim that naturalness, with its perceived arbitrary baselines of past ecosystems and the exclusion of humans, offers a logical and essential element in the development of conservation and management objectives, while others are unwilling to acknowledge that naturalness and unnaturalness should play such a role in conservation ideals.

Setting clear and agreed upon goals, however, is crucial for the success of biological conservation (and management of wild horses in particular) (Nogués-Bravo et al., 2016; Anderson, 1991; Angermeir, 2000; Comer, 1997; Haila et al., 1997; Povilitis, 2001; Grumbine, 1994; Hunter, 1996). The ongoing debate over naturalness is embedded within the fundamental values and goals of biological conservation and, thus, the role given to naturalness – both at the individual and ecosystem level – has important implications for how conservation is practiced. How naturalness is interpreted will inevitably affect the standard by which to judge the permissibility of ecosystem alteration and, consequently, the appropriateness of rewilding in conservation efforts.

Not only do rewilding and restoration ecology continually invite discourse surrounding their views on the importance on the role of 'naturalness', but debate is also generated regarding the degree of human control of nature (Siipi, 2004; The Wildlife Society, 2020). Opposition to rewilding often stems from the fear of an apparent lack of control, as well as the associated opinion surrounding rewilding philosophy that such tactics result in escalated threats to the ecosystem and uncertainty or ambiguity in future outcomes. Traditional restoration, on the other hand, seeks to maintain a sense of human control, doing everything humanly conceivable to preserve the status quo, sometimes to preserve the overall look of the countryside or, more often, to micro-manage a particular environment for the perceived benefit of several chosen native species, or perhaps a single favored one. This type of management is highly controversial for those who would prefer to simply let nature take its course (Heber Wild Horses, Facebook post, 2022), or for those who do not support the subjective and anthropocentric nature of traditional wildlife management, particularly where it relates to the reduction by federal land management agencies, of perceived pests or "overabundant" species (a common

view of North America's wild horses held by federal land management agencies) (The Wildlife Society, 2020).

In the remainder of this chapter, I explore these ideas further by diving into the concepts and disagreements surrounding rewilding. Such debates stem from disagreements on the degree of human involvement on the "natural" landscape, including the control of nature, versus the "untamed wilderness" and the blurring of these two states. Additionally, I will examine the theoretical aspects that are surfacing which connect the biological and physical components of ecosystems and act as driving forces of rewilding science. Finally, I will provide insight into the interactions between ecology and pioneering rewilding projects and will discern how these projects are leading to the formation of conservation agendas and movements that apply to the wild horse management debate. A framework for rewilding in conservation planning that includes the needs of wild horses and the concerns of their advocates will also be examined. My goal is to illuminate the potential biases surrounding the methodologies employed by conservation biology in its efforts to manage nature specifically by highlighting the use of detrimental, subjective metaphors (introduced in Chapter Two) such as "native," "invasive," "wild," "feral," "tame" and "domestic" strategically aimed at *Equus caballus*, an animal that uniquely exemplifies the issue of the confusion and legitimacy of various species' functions or right to exist on the North American landscape.

The Difficulties in Managing a Cultural Icon

The irony-rich wildlife management history as viewed through the lens of the horse (detailed in chapters one and two) reveals that the horse has been classified by North American wildlife management agencies and other sectors of the population, as 'non-native.' In spite of the fact that the ancestors of equids evolved in North America over 55 million years ago and are native *only* in North America, the

'non-native' classification persists due to the horse's disappearance on this continent at the end of the Pleistocene, roughly 5-10,000 years after the arrival of hominoids and later re-introduction by humans to their homeland 8,000 years later (Flores, 2016; Kirkpatrick & Fazio, 2020). Proponents of the 'non-native' classification claim that the presence of horses on the North American continent today is due to this earlier 'non-natural' human reintroduction (The Wildlife Society, 2020). Although pre-historic humans may have hunted the horse and contributed to its extinction on the North American continent, it was the perceived *non-natural* human intervention as opposed to *natural* causes that brought them back, thus leading to the proclamation that horses are alien to the landscape. They are also dubbed by many groups as 'feral,' from the Latin word *fera*, signifying they are beasts that have descended from domesticated specimens. For a portion of their 10,000-year absence from the North American continent, horses were shrouded within a mutualistic relationship with humans who exerted a significant degree of influence over the horse's genetics, reproduction and wellbeing. This previous domestication dubbed free-roaming horses, under North American land management policies, as an unwanted trespasser on the 'natural' landscape, regardless of the length of time since domestication and their ability to revert, *in one generation*, to wild behavior (Netherlands [Salt River Wild Horse Management], personal interview, 2018). Although free-roaming horses now live (somewhat) autonomously on various Herd Management Areas or Wild Horse Territories in the absence of extensive human provisional care, their history of domestication 6,000 years ago on the Steppes of Asia has excluded them from being classified as truly 'wild' and managed as other North American native wildlife species.

The subjective character of nativeness has led to ambiguity over which species merit protection. While 'Big Game' native species (those over 600 pounds

such as deer, pronghorn or elk) are managed by state wildlife management agencies and regulated through hunting permits and rare native species are protected by federal agencies through implementation of the Endangered Species Act, non-native and feral species, under U.S. federal and state land management policies, are considered 'un-natural' and have no legal rights to roam with other wildlife on public rangelands and within national parks (FLPMA, 1971).

Due to increasing public desire that wild equids remain on the landscape, as they were considered "fast disappearing from the American scene" (as proclaimed by the 1971 Wild Free-Roaming Horse and Burro Act) – and a growing demand that proper attention be granted for their welfare – free-roaming horses are currently managed as a *special status species*: considered feral by agencies on public lands but protected *indefinitely* as a cultural icon within wild horse territories or Herd Management Areas. These are areas which, ironically, were selected by the federal government *not* for their suitability for horses – such as they might be for rewilding or restoration efforts – but simply due to the fact that these were areas horses had been pushed to through extensive mustanging (removal of wild horses from the range) in the early portions of the 20th century (described in Chapter One) (Philipps, 2017). Many of these arid environments are unsuitable for herbivores or for the predators that hunt them as they do not include available space to maintain genetic diversity within populations, the necessary forage for proper nutritional concerns or cover and critical water resources that play crucial roles in providing a 'thriving ecological balance' for all species (American Wild Horse Campaign, 2020a; Ovchinnikov et al., 2018). Inattention to the complex energy food webs within ecosystems lead to unsustainable practices in wildlife management. Unlike species placed on the Endangered Species list, the horse's protected status can never be removed, even though a healthy, robust population may exist in many areas. The

history over the first half of the 20th century has revealed that this classification for horses, as a cultural icon, is not ecologically sustainable and is based on emotional concerns for animal welfare rather than ecological needs (Turner & Morrison, 2001; Philipps, 2017; NRC, 2013).

The BLM and USFS are in a curious position when it comes to the animals roaming their lands. These federal agencies control livestock, but not wildlife. Wildlife are overseen either by states or, if endangered, by the U.S. Fish and Wildlife Service. So, while each may control the management of the wild horses found in Herd Management Areas or Wild Horse Territories, they do not manage the predators stalking them. During its formation after the Taylor Grazing Act of 1921, the BLM was largely staffed by ranchers, not wildlife biologists (Coggins et al., 2007). Historically, early BLM employees adopted a rancher's perspective or approach towards wild horse management (although the trend is moving away from this today) (Hall [BLM District Manager], personal interview, 2018).

Wildlife biologists also often view 'feral' horses as a corruption to the natural system and believe that they are more likely to disrupt an ecosystem than become a part of it (The Wildlife Society, 2020; Vander Lee et al., n.d.). Until very recently they have typically avoided studying wild horses (J.W. Turner, 2015; Turner & Morrison, 2001.). The amount of research surrounding the relationship between equids and their role in the ecosystem is very thin. According to ecologist John Turner, who has studied the predator/prey relationships, reproductive capabilities and movements of wild horses for over 30 years, wildlife biologists don't really see wild horses as part of anything (Turner & Morrison, 2001; Philipps, 2017). Not really wild. Not really domesticated. And management policy reflects that

Forever Wild and Native

Wild horses are not alone in their plight to find their place on the landscape due to the difficulties ensued as a result of the use of confusing non-native or invasive labels which continue to confound their legitimacy. The perceived invasion of particular wildlife species categorized as nonnative or feral has prompted a call for conservation biologists to initiate the eradication of all such species, especially where they endanger native biota (Wallach, Bekoff, et al. 2018). Both groups are traditionally classified as pests, nuisances, or even invasive by natural resource managers and many sectors of the population in North America. Consequently, the legitimacy of these 'unwanted,' 'overabundant' species on the landscape has been called into question as well as the policies mandated to determine their fate (Hoag, 2014; Chew & Hamilton, 2011; Davis, Chew, et al., 2011; Warburton & Norton, 2009).

While a species might be considered native on a particular land mass due to its appearance within a specific geologic time-period, as specified by the English botanist John Henslow who first outlined the concept of nativeness in 1835 (Henslow, 1835), there is a bigger picture here. The deep history of evolution illustrates how phenomena such as plate tectonics, changing climate, the branching out and hybridization of sub species such as the red wolf – and domestication and human reintroduction of wild species (e.g., the dingo and the horse) continuously alter and blur the status of an organism's nativeness in place and time (Davis, Chew, et al., 2011; Warburton & Norton, 2009; Beck et al., 2006; Huxel, 1999). In the absence of a temporal record to assess a species' history, confusion and ambiguity surrounding their nativity can often result. Truly native, wild animals' ancestors, by many conservation biologists' or natural resource managers' classification, have never been domesticated or modified by selective breeding. As opposed to domesticated

organisms, every individual classified as 'wild' has its own natural range of distribution in which it is regarded as indigenous. Outside its native range, a species may be introduced by human activity either intentionally or unintentionally. This process is considered non-natural by many and renders the animal non-native in its new habitat (Clout, 2002). Invasive species are predominantly (but not always) categorized as non-native to the ecosystem under consideration. Spreading from their point of introduction, they become overabundant to the perceived detriment of locally evolved species. The belief is that their introduction threatens pristine wilderness and biodiversity values, negatively impacts primary production, or increases a threat of disease(s) in animal or human populations (Davis, Chew, et al., 2011; Warburton & Norton, 2009; Beck et al., 2006; Huxel, 1999).

At the same time, it has long been recognized that no wilderness is truly pristine as human influences have altered ecosystem functioning for eons (Denevan, 1992). Throughout our evolutionary history, humans have eliminated species, disrupted natural processes, and degraded and destroyed complex local webs of life. Undoubtedly, environments will unceasingly change with or without further anthropological intervention. North American land management policy persist in using the term 'native' to signify the flora and fauna observed upon the arrival of Christopher Columbus in the New World, just over 500 years ago, a mere blip in time as far as geologic records go. The term implies a sense of belonging or entitlement to the landscape. In recent decades, U.S. wildlife policy has provided these native species with special protections, in an attempt to safeguard them, while working to eradicate the 'invaders' (Hoag, 2014; Chew & Hamilton, 2011; Davis, Chew, et al., 2011; Warburton & Norton, 2009). Species that have not co-evolved will certainly have a period of readjustment. It is not surprising then, that an introduced predator can wipe out native species that lack the ability to recognize or avoid it – such as

was seen after the introduction of the mongoose to several Caribbean islands, which led to the extinction of many reptiles and ground-nesting birds (Bolotnikova, 2021). In addition, introduced species can threaten native species by competing for limited resources such as space and water. In the Eastern United States, zebra mussels, originally native to the lakes of southeast Russia and accidentally introduced to North America in the late 1980s, led to the extinction of many native freshwater mussels by growing on top of them and preventing them from feeding. Furthermore, the zebra mussels were responsible for clogging water pipes and costing the U.S. power industry and water utilities hundreds of millions of dollars in damage (Bolotnikova, 2021). Through human facilitation, ecological restoration seeks to repair what is believed to be damaged or destroyed ecosystems. In North America, millions of dollars have been spent in efforts to save the native black-footed ferret and the sage hen in the west and millions more building electric fences to keep the invasive Asian carp out of the Great Lakes and kill Asian pythons who have made their way into the Everglades. Wildlife laws work unceasingly to protect the bobcat, but certainly not the feral cat (Bolotnikova, 2021).

Control of what is perceived as nuisance wildlife presents a classic example of a 'wicked problem.' Because interest groups with differing values see the problem so differently, they cannot agree in formulating the problem (Are there too many horses, too many cattle or not enough predators?), much less in *solving* problems creatively and cooperatively. Wicked problems, unlike benign problems that have one definitive answer, defy right-wrong, either-or answers (Balint et al., 2011). To wisely resolve this issue, it's crucial to have some sense of what the public values in nature, as well as an understanding of how science should interpret and act on those values. Polarization of opinion on the value of particular species has been demonstrated in community debates concerning the management of deer, feral pigs

buffalo, feral cats and free-ranging horses (Wright, 2009; Zivin et al., 2000; Albrecht et al., 2009; Lloyd & Miller, 2010; Bhattacharyya & Larson, 2014; Rikoon, 2006). The differing public opinions regarding the management of particular species, especially those considered to be feral, have inspired resource managers to adopt innovative approaches to managing wildlife populations. Recreational hunting has been proposed to manage feral pigs, and initiatives to trap, neuter, and return feral cats are common across the United States (Zivin et al., 2000; Albrecht et al., 2009). In each of those examples, the cultural role of a species in a given society is a factor in how individual animals are treated and managed. There is no doubt: different cultures have different views on management. Taking careful account of those disparate views acknowledges that policy should inevitably be based on both scientific evidence and human values. As ethno-ecologist Jonaki Bhattacharyya (2014) noted, the debate over whether free-ranging horses are wild or feral is highly complex and involves a wide variety of issues, including the behavioral and physiological traits of different horse populations, their effects in different ecosystems, and disparate human values and perceptions of nature (Bhattacharyya & Larson, 2014).

Although management of invasive, feral or over-abundant wildlife species can incorporate nonlethal techniques such as repellents and fencing, most efforts still rely heavily on the use of lethal control including poisons, traps, or shooting (NRC, 2013). These fatal methods, especially trapping, have been the focus of vociferous opposition from welfare and animal rights groups for decades (NRC, 2013). Indeed, the perceived cruel tactics employing the use of helicopters in wild horse gathers continues to incite enthusiastic debate (see Chapter Three and Four). In response, considerable efforts have been made to enhance the humaneness of the range of tools used, such as fertility control for wildlife through the use of Porcine zona

pellucida (PZP) (discussed further in Chapter Four). At the same time, even if control methods are improved to address animal welfare concerns, ethical issues remain about whether or not management of so called 'nuisance' wildlife is justified in the first place (Davis, Chew, et al., 2011). Categorizing biota according to their adherence to cultural standards of belonging does not advance our understanding of ecology (Chew & Hamilton, 2011). According to the belief of some ecologists, nativeness should no longer be considered a sign of evolutionary fitness or confirmation that a species will have positive effects on an ecosystem. A case in point is the *native* mountain pine beetle currently presumed to be destroying more trees than any other insect in North America (Invasive Species Center, n.d.).

In the framework of a world-wide biodiversity crisis and the increasingly accepted acknowledgment that the earth has entered the 'Anthropocene', conservationists are being asked to take action with unique approaches that address the concerns of the 21st century (Minteer, 2013). Using the tools of restoration ecology, conservation biologists often seek to preserve a historical ecological balance in a world where humans have shifted the balance dramatically. Restored environments may take years to function without significant human involvement. Many may never be equivalent to their intact predecessors; instead requiring intensive management indefinitely, due to anthropogenic climate change or to the impact of natural phenomena such as wildfires or invasions by other opportunistic species (Jepson & Blythe, 2020). Some researchers believe it is difficult to justify designation of a privileged status to so called native species on a warming planet when plants and animals are already migrating toward the poles or up mountainsides in search of environmental conditions they can tolerate (Davis, Chew, et al., 2011). Should we consider these migrators invasive in their new homes? Classic restorative efforts may, in fact, prove detrimental to the newly formed relationships between

species that now *rely* on that unwanted trespasser that has more recently appeared on the landscape. Is there a point in time when the non-native or feral label wears off? In spite of this ongoing debate, restoration of previous ecosystems and the value of protecting native species remain an important component of the conservation toolbox (Jepson & Blythe, 2020).

Overabundance: Invasions from Within

Findings by wildlife ecologist Robert Garrott and colleagues illustrate that conservation biologists have given little attention to the problem of controlling excessive populations of species classified as native, but acting in an invasive manner. A number of factors have been proposed that contribute to the lack of dialogue and research within conservation biology dealing with common and perceived locally overabundant species. The assumption is that they affect rarer native species, and, consequently, cause serious conflicts with society. Largely, it can be attributed to the fact that it is characteristically more difficult to establish when a species (such as free roaming horses) becomes excessive than to determine when it is dangerously rare. Judgments of overabundance become largely defined by one's interests, likes, and dislikes. As a result, this categorization tends to involve biased judgments. Generalists or opportunists typically benefit from anthropogenic landscape changes, evidenced by their increasing numbers and expanding distributions in urban or disturbed areas. North American examples include beaver, Canada Geese, cottontail rabbit, coyote, gray fox, gray squirrel, raccoon, striped skunk, and white-tailed deer (to name a few). Similar to non-native (exotic) species, overabundant native species can decrease natural diversity by controlling resources, initiating or proliferating communicable diseases and parasites, changing the species composition or relative abundance of sympatric species, and even causing local extinctions (Garrott et al., 1993; Coblenz, 1990; Soulé, 1990; Temple, 1990;

Westman, 1990). For example, red foxes have expanded into wetlands in California and have markedly reduced populations of endangered Light-Footed Clapper Rails and California Least Terns. In Puget Sound, Washington, predation by California sea lions is threatening the persistence of an endangered run of steelhead in many areas and over browsing by white-tailed deer is preventing the regeneration of palatable components of plant communities, thereby affecting ecosystem diversity and the abundance of several rare species (Garrott et al., 1993).

Population ecologist Graeme James Caughley (1981) defined several categories of overpopulation that contribute to such biased interpretations of overabundance (Caughley, 1981). One category involves species that threaten human life or livelihood; for instance, sea otters depleting commercially exploited crab populations in Alaska (Garrott et al., 1993), large predators killing livestock and humans (Center for Human-Carnivore Coexistence, n.d.), and bison and elk infected with tuberculosis or brucellosis leaving Yellowstone National Park and potentially transmitting the diseases to livestock and humans (Garrott et al., 1993). Concerns for the wild horse along the salt River in Arizona include claims of increasing danger to motor vehicle accidents as well as a recent concern of an outbreak of strangles and transmission to domestic horses utilized by trail riders throughout the area. Claims of threats to livestock producers' livelihood have also been substantiated in the Heber Wild Horse Territory (among other areas) (Salt River Wild Horse Management Group, 2022; Netherlands [Salt River Wild Horse Management], personal interview, 2019; Porter [rancher], personal interview, 2020). Another category of overabundance involves common species that depress the densities of preferred species. Examples include coyote predation on San Joaquin kit foxes and black-footed ferrets, Great Horned Owl, predation on Peregrine Falcon chicks, and Barred Owl range expansions resulting in competition with the Northern Spotted Owl

(Garrott et al., 1993). The Center for Biological Diversity continues to make claims against the USFS for the presence of wild horses in the Apache-Sitgreaves National Forests and the perceived damage to the endangered New Mexican Meadow Jumping Mouse's critical habitat (see Chapter Four) (Center For Biological Diversity, n.d.).

One can certainly argue about these examples and whether all species have been placed in the proper classes, or even if the classes themselves are all inclusive and appropriate. Such disagreement, however, simply illustrates that 'overabundance' is very difficult to define and is somewhat arbitrary. Wild horse advocates continue to protest the arbitrary population baselines that the BLM has set at 27,000 for free roaming horses within Herd Management Areas in the U.S. Perhaps the most important reason for interest in the conservation dilemma posed by locally overabundant populations is that the actions required to "correct" these situations entail the killing or removal of animals (ASPA, n.d.). These are far less popular management actions than establishing reserves, protecting species from exploitation, reintroducing species, and artificial propagation. While the public supports at least the idea of preserving or restoring ecological communities and enhancing populations of animals that are perilously low, *killing* animals is viewed as unattractive at the very least, and relocation may be seen as impractical and ineffective. This negative attitude about the procedures conservationists use to minimize the challenges of overabundance is not limited to the general public. It is also widespread among many conservation biologists (See Chapter Two) (Wallach, Bekoff, Batavia, et al., 2018; Wallach, Batavia, et al., 2020).

Perhaps one of the most perplexing socio-ecological problems for conservationists is when populations of actively managed and protected species that were once considered rare have recovered to the point where land managers or sectors of the public now perceive them to be locally overabundant. The Wild Free-

Roaming Horses and Burros Act was passed in 1971 in response to the horse's dwindling numbers following mustanging efforts in the early portion of the 20th century. Some estimates claim the population size at that time was as low as 17,000. 2020 numbers have been estimated to hover around 100,000 on public rangelands with another 55,000 in holding facilities and at least another 60,000 on Native American reservations throughout the Southwest. Many wild horse advocates, however, continue to proclaim that populations of wild horses are in jeopardy and that their perceived overabundance has been fabricated by the BLM in an attempt to decrease herd sizes and allow inbreeding to occur; in effect, to breed them out of existence (Netherlands [Salt River Wild Horse Management], personal interview, 2019; American Wild Horse Campaign, 2020a; NRC, 2013).

Safe Nature Spaces and Human Involvement

While acceptable or even desirable within reserves, many unique species are not tolerated by local cultures once they *leave* their protected areas (Brown, 2022; Polley, 2021). Populations of elephants in some East Africa reserves have grown to such a magnitude that they are destroying their natural environment and their behavior is clashing with the local villagers. In India, tiger attacks on humans around the boundary of preserves have been a continual problem that has resulted in hundreds of deaths and injuries (Brown, 2022; Polley, 2021). In September of 1999, the U.S. Fish and Wildlife Service, for the first time, issued a permit to a rancher in Wyoming that would allow him to shoot problem wolves that migrate out of Yellowstone and attack livestock on private property (Brown, 2022; Polley, 2021). Under extraordinary circumstances and as part of the nonessential experimental population rule under the Endangered Species Act, the Service was able to issue a special permit allowing a landowner or their designee to assist the Service in controlling chronic problem wolves. A policy adopted by the Oregon Department of

Fish and Wildlife has since allowed ranchers and other livestock producers to kill wolves on their property (Krebs, 2014). Restrictions require ranchers to witness the predators killing, biting, or injuring their livestock and working dogs. Difficulties have arisen as well when wild horses roam off of designated territories. The perception by many members of the public is that the horses continue to remain protected, wherever they roam. Others (many livestock operators or sports enthusiasts) see these 'trespassers' as fair game – Shooting horses on sight would be considered a heroic act among many in the rancher community in order to improve ecosystem health, hearkening back to the days when livestock operators-controlled populations at the turn of the 20th century (see Chapter One) (Gibson [rancher], personal interview, 2017).

We are reminded by the iconic conservationist Aldo Leopold that: "A land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it" (Leopold, 1966). How then, should we define the role of that citizen? If the goal of traditional restoration ecology is to recreate a healthy landscape that represents a baseline of past ecosystems, how far back in time should researchers or policy makers attempt to travel in order to understand the role humans played? No doubt, humans contributed to the extirpation of the Pleistocene horse (and other megafauna) and were vigilant in efforts to eradicate all large predators in North America, even throughout the early portions of the 20th century. In fact, sporadic extermination efforts are still ongoing with species such as the ever-resilient coyote (Flores, 2016). If humans were responsible for the destruction of previous predator/prey relationships within an ecosystem, what moral duties, if any, do humans have to reestablish those earlier roles? If the goal of rewilding is to eventually remove human involvement and create 'self-willed natures,' can we justify a continuation of humans in their pre-historic predator role on the North American

landscape (through the culling of over abundant species)? Or, as some extreme rewilders profess, should we go back at least 40,000 years to a time when we can reasonably assume some sort of 'erasing' of human involvement? Is it wrong to erase *all* human involvement? Would stakeholders concerned with animal welfare accept such lack of involvement? What are the consequences to wildlife and humans?

This type of confusion highlights just how perplexing our responsibilities are to protect the natural world and how the definition of our goals for the future construction of nature, particularly in areas where wild horses roam, is a complicated issue. It also underscores the need to establish the human niche in those places we like to think of as wild, untamed or natural. It is therefore imperative that nature conservation and the needs of all wildlife be reconciled with human needs and desires, on a case by case basis, irrespective of the decisive human constructed wildlife labels which pit stakeholders involved in land management disputes against one another. This is particularly true as human populations around the world encroach on wildlife habitat, and as conservation practices continue to manipulate future ecosystems and the lives of the animals that reside within them.

The existing landscapes and the desired future environments for free roaming horses in Wild Horse Territories and Herd Management Areas throughout North America continue to be entangled in the considerable differences in cultural values and political decision making. To frame the wild horse management dispute as simply an issue that embodies whether free-roaming horses are labeled as feral verses wild, or native verses non-native, discounts the complexity of concerns that heavily factor into the debate. These confounding issues include: 1) The inability to define the goals of conservation biology and degree of human control of free-roaming horses (traditional restoration verses re-wilding); 2) Inattention toward the diversity of society's mixed cultural values and perceptions of nature (And the horse

in particular); 3) Natural resource managers' disregard for the diverse behavioral and physiological traits (function) displayed by various wild horse populations and their predators and the consequent effect on ecosystem function; 4) Indifference to the horse's unique physiological (and social) welfare needs; 5) Lack of acknowledgement of the range of impacts – as either ecosystem engineers or destructive agents – displayed by free-ranging horses within various ecosystems and micro-climates; and 6) Failure to share political power and indifference toward social relationships of stakeholders within various communities (i.e., the psychological needs of humans and their relationship to the wild horses).

What might a less ideological and more pragmatic view of managing the future well-being of the wild horses, as well as human well-being and our connection to nature, look like? How might the distinctiveness of specific wild horse territories or Herd Management Areas unfold to inform our understanding of the human and non-human involvement in the co-production of nature, and finally, how might fluctuating degrees of autonomy for the horses intersect with temporalities (the linear progression of past, present, and future) and varying degrees of the use of landscape by all "wild" and "non-wild" members of the ecosystem? Relaxing the concepts of nativity in an age of extinction and recognizing the public's flexibility in reconstruction of nature toward the creation of novel ecosystems, could allow for new understandings of ecological function to emerge and help focus attention on broader conservation goals.

How might the rewilding of wild horses in suitable areas of North America provide an economically and ecologically sustainable solution for the ever-increasing numbers of wild horses currently removed from public rangelands and placed in holding facilities or off-range pastures? What political and social obstacles would need to be overcome to achieve rewilding goals? Could such an approach satisfy

both welfare and ecological needs or is rewilding a cloudy and potentially dangerous idea with minimal connection to current conservation goals?

Rewilding Foundations

The expression 'rewilding' was originally conceived in the mid-1990s by a group of U.S. conservation biologists led by environmentalist Dave Foreman and backed by a philosophical mix of wilderness thinking and deep ecology (Foreman 2004; Jepson & Blythe, 2020). In 1998, Michael Soulé, and Reed Noss published a landmark paper describing the scientific basis for rewilding: "Rewilding and Biodiversity: Complimentary Goals for Continental Conservation" (Soulé & Noss, 1998). Their efforts established rewilding as a continental scale agenda to restore self-regulating land communities through the creation of large wilderness complexes that maintained populations of top predators (e.g., wolves in Yellowstone National Park) that reaffirmed top-down trophic controls. This has become known as 'the three Cs' (cores, corridors and carnivores) model of rewilding. Separately, the Dutch embarked on a revolutionary new conservation restoration plan during the 1980s termed 'nature development'. This resembled the U.S. rewilding agenda, specifically the creation of an ecological network to connect remaining natural areas and the aspiration for 'self-willed' natures (i.e., ecological systems that would function and evolve without the constant intensive management required in many European reserves) (Vera, 2009; Jepson & Blyth, 2020).

Subsequently, over the past 25 years, numerous classifications of rewilding have been brought forth out of which at least four distinctive constructions may be identified: 1) Trophic rewilding, the aforementioned three C's model designed to reintroduce species to reestablish top-down trophic interactions; based on the regulatory role of large predators; 2) Pleistocene rewilding, aimed at the restoration of ecological interactions of species which vanished during the Pleistocene

megafauna extinctions; 3) Ecological rewilding (also known as 'translocation rewilding'), geared towards allowing natural processes to regain dominance via species reintroductions; and 4) Passive rewilding, primarily involving land abandonment (more so in Europe) and the elimination of human interference (Jepson & Blythe, 2020).

In addition to the various classifications and procedures involved in the numerous types of rewilding, discrepancies surrounding the distinction between rewilding and 'restoration' have arisen. As mentioned earlier in this chapter, restoration was originally recognized as a management tactic with an overarching goal of returning ecosystems to some previous state (after a major disturbance), occasionally through the use of intensive human interventions. The *original* concept of rewilding, on the other hand, aimed at returning a managed area back to the wild in the form of a self-sustaining ecosystem, with an emphasis on processes ('function' within the ecosystem) rather than the end result (Pettorelli et al., 2018, p. 1117). The division between the two concepts, however, is no longer distinct, as terms such as 'passive restoration,' 'open-ended restoration,' and 'renewal ecology' have crept into the rewilding/restoration lexicon. This has resulted in a lack of clarity on what rewilding is, how it should be managed, and what it should accomplish. Examples of the varied definitions of rewilding, proposed from 2015-2018 have suggested the following:

- A long-term aim of maintaining, or increasing, biodiversity, while reducing the impact of present and past *human interventions* through the restoration of species and ecological processes.
- Reintroduction of extirpated species or functional types of high ecological importance to restore self-managing functional, biodiverse ecosystems.
- Returning a *non-wild* area back to the *wild*.
- Restoring *wild* organisms and/or ecological processes to ecosystems where such organisms and processes are either missing or are 'dysfunctional'
- A focus on benefits of renewed ecosystem function or processes rather than classic restoration thinking where a community converges towards a pre-defined target via a predictable trajectory.

- Self-sustaining ecosystems close to the '*natural*' state often supported by (re)introduction of large herbivores and habitat protection for carnivores and other species. (Pettorelli et al., 2018, p. 1117)

The lack of a formally agreed definition for rewilding is, among other things, impeding efforts to advance rewilding as a practice and incorporate it into policy. In the face of the current biodiversity crisis, there is an urgent need to turn the rewilding concept into a verified approach for delivering environmental governance policy objectives, such as enhancing availability of natural resources or the provision of ecosystem services. With such discrepancies in re-wilding terminology and constructs, and to also gain a foothold in application of rewilding techniques worldwide, ecologist Nathalie Pettorelli and colleagues have proposed their own definition that not only eliminates confusing terminology incorporated into other definitions, but also integrates elements of all forms of rewilding. "The reorganization of biota and ecosystem processes to set an identified social–ecological system on a *preferred trajectory*, leading to the self-sustaining provision of ecosystem services with minimal ongoing management" (Pettorelli et al., 2018, p. 1117). Their definition of ecosystem processes is interpreted as transfers of energy, material, or organisms among compartments in an ecosystem. Examples of ecosystem processes include primary and secondary production, decomposition, heterotrophic respiration and evapotranspiration. Social–ecological systems are broadly defined as linked systems of people and nature, where humans are seen as part of, and not apart from, nature. As Pettorelli and colleagues illustrate, this new definition has multiple advantages that assists in the ability to solidify conservation goals and provide legitimacy for rewilding as a discipline (Pettorelli et al., 2018). Perhaps, most importantly, this definition is not reliant on the concept of 'wilderness' or 'naturalness', both highly subjective concepts that tend to promote the exclusion of humans from landscapes. Such varying perceptions of what the wild resembles and what natural means vary

geographically and culturally and can be linked to people's access to nature. Furthermore, the use of both 'wild' and 'natural' emphasizes the popular perception that the absence of sustained human intervention is central to the rewilding process. However, as Pettorelli et al. point out, the perception that wild areas must be free of human influence is ineffectually restrictive, as one or more human species have been integral to most ecosystems in Africa and Asia for over 2 million years (and millennia for other continents); therefore, any return to a preservation approach is unlikely to work. In addition, allowing humans to interact with, and be part of, wild ecosystems should be compatible with facilitating the emergence of self-sustaining ecological units. In fact, in many instances those ecosystems requiring restoration or rewilding are often on private lands or in regions where human activities are fully established (Pettorelli et al., 2018; Coates, 2006; Finch & Baxter, 2007).

Perhaps the most significant gain with this newer definition of rewilding is seen through its relevance to both restoration and forward-looking approaches toward enhancing the functional properties of ecologically degraded landscapes under a changing climate. According to Pettorelli et al.:

In the context of rewilding, which is process-oriented, the components of an ecosystem's 'machinery' are, thus, reorganized in the way that damaged or lost operating parts are repaired, replaced or retooled to resume smooth operation (service delivery) with low maintenance (wildness). This might involve replacing original parts (reintroductions), and if that option (restoration) is feasible, then it should be considered. But if original parts are not available, or if the operating conditions have changed substantially, then nonoriginal parts (taxon substitutions) might be required to achieve the desired functional outcomes. (2018, p.1117)

In the framework of this all-encompassing definition of rewilding and its demarcation from restoration, three theories are evolving and coming together to structure aspects of rewilding science and guide the design of rewilding initiatives. The first, 'Trophic Cascade', seeks to understand interactions between organisms through the lens of food chains and investigates how the presence or absence of

interactions (for example, between predators and prey) affects the complexity and structure of the ecological system (Foreman, 2004). It further examines the ecosystem processes (e.g., decomposition and nutrient cycling) that arise from chemical, physical, and biological interactions between the living and nonliving components of the environment. The second theory, expressed as 'Landscapes of Fear' or indirect cascades, incorporates the anticipation or awareness of danger felt by animals and resulting provocation to avoid places where they lack a clear sight of and/or opportunities to flee predators or other aggravations (for example, biting insects) (Laundre et al., 2010). The third theory, labeled simply as 'Ecospace', focuses on the conditions and resources that enable organisms (and relationships) to *develop* (Brunbjerg et al., 2017). It contrasts with the notion of habitat or niche, which focuses on the needs of *existing* organisms and traditional conservation which categorizes, protects and manages habitats that provide the environmental conditions needed by current species or a set of species. Rather than providing a framework for understanding what *is*, ecospace offers a framework for understanding what could *become*. In the long run, such thinking will offer a blueprint for actions that will help nature recover and for ecosystems to re-expand (Jepson & Blythe, 2020).

The Practice and Ethics of Rewilding

While the mixture of perceptions on what rewilding encompasses has attracted criticism on its theoretical foundations, it has also proved highly controversial on legal, political, economic and cultural grounds, drawing skepticism from scientists and a wide array of stakeholders beyond the scientific community. The unconventional approach of Pleistocene rewilding, for example (Zimov, 2005; Donlan et al., 2006), called attention to the continental scale declines in megafauna over the millennia, which, in these proponents' assertion, resulted in the

downgrading of nature. Their belief was that assemblies of large vertebrates and predators could recreate those complex food webs that were sorely missing. While Russian ecologist Sergey Zimov focused on the Arctic Tundra in his paper 'Pleistocene Park: return of the mammoth's ecosystem' (2005), American biologist Josh Donlan and colleagues centered on North American Prairies in 'Pleistocene Rewilding: an optimistic agenda for twenty-first century conservation' (2006). Zimov pointed out that up until 10,000 years ago, much of the Arctic was covered by steppe grasslands created and maintained by vast herds of mega herbivores. He argued that their extinction could be attributed to human hunting pressure (the 'overkill' hypothesis) and that the mammoth steppe ecosystem can and ought to be restored as a strategy to reduce carbon emissions from the thawing permafrost soils. In an effort to recreate the grassland ecosystem of the Pleistocene, Zimov (2005) initiated Pleistocene re-wilding in Siberia with the introduction of mega-herbivores, including wood bison (*Bison bison athabascae*), Yakutian horses (*Equus* sp.), and muskoxen (*Ovibos moschatus*). Reviews on whether this endeavor has delivered what it promised, however, have been mixed (Oliveria-Santos & Fernandez, 2010; Nogués-Bravo et al., 2016; Zimov, 2005).

The North American Pleistocene rewilding proposal of Donlan et al. (2005) could appear to be even more ambitious as it aims to reconstruct an ancient ecosystem by translocating a diverse array of African and Asian megafauna to geographical regions and plant communities that have evolved without such creatures since the Pleistocene. Donlan et al.'s vision of Pleistocene re-wilding of North America has two principle goals: 1) to restore some of the evolutionary and ecological potential that was lost from North America 13,000 years ago; and 2) to help prevent the extinction of some of the world's existing megafauna by creating new, and presumably better protected, populations in North America. Species

targeted for introduction span several trophic levels and include predators such as African cheetahs (*Acinonyx jubatus*) and lions (*Panthera leo*), and large herbivores like African (*Loxodonta africana*) and Asian (*Elephas maximus*) elephants, various equids (*Equus* spp.), and Bactrian camels (*Camelus bactranus*). This plan includes animals that are both descendant species of extinct taxa and ecological proxies for extinct species. The belief is that surviving herbivore guilds can 'do the ecological job' of lost species and that this rewilding is an improved option over doing nothing or relying on the senescent and inadequate protectionist approach of the 1970s. Not surprisingly, such efforts by Zimov and Donlan et al. have been robustly criticized by many in the conservation establishment, who accused the authors of opening a Pandora's box and proposing the creation of 'Frankenstein' ecosystems (Donlan et al., 2006; Nogués-Bravo et al., 2016).

According to evolutionary ecologist Daniel Rubenstein et al., while Pleistocene re-wilding could potentially enhance the ecological capability of some of North America's ecosystems by reintroducing predators on species like pronghorn or wild horses (and thus, indirectly restore the evolutionary potential of these prey species), and/or by restoring herbivorous keystone species like elephants to the temperate grasslands, it is questionable whether it would restore ecological potential to Pleistocene levels. Indeed, rather than restoring our contemporary wild ecosystems to the historic wild ecosystems of the Pleistocene and their original levels of ecosystem functioning, which are unknown, Pleistocene re-wilding could instead result in 're-wilded' novel, or emerging, ecosystems with unique species compositions and new or altered levels of ecosystem functioning. Biogeographic assemblages and evolutionary lineages would be co-mingled in novel ways; new parasites and diseases could be introduced, and food chains would be disrupted. Moreover, without really knowing how Pleistocene ecosystems functioned, there will

be no way to determine whether Pleistocene re-wilding restored ancient ecosystems or disrupted contemporary ones (Rubenstein et al., 2006).

While the reintroduction of large grazers can, in some cases, shape and restore grassland ecosystems, the effects can be varied. Some link these effects to whether or not the grazers are indigenous (native species) or exotic (introduced). Exotic grazers, such as the one-humped camel (*Camelus dromedarius*), for example, have degraded desert ecosystems in Australia by selectively eating rare plant species. At the same time, modern introductions of wild equid species have dramatically altered vegetation in marsh and grassland ecosystems worldwide with a variety of impacts on native animal species; some negative and some positive. Similarly, the reintroduction of large predators can also have unexpected results on populations of prey species. For instance, wolves reintroduced to Yellowstone National Park preyed upon elk more, and other species of ungulates less, than what was predicted prior to reintroduction (Ripple & Beschta, 2012).

Beyond the concerns for the creation of unknown or novel ecosystems, certain rewilding schemes have been regarded by the general public as disturbing from an animal welfare perspective. The perceived radical experiment in nature restoration of the reclaimed delta at the Oostvaardersplassen (OVP) in the Netherlands, led by progressive Dutch ecologist Frans Vera, is one such example (F. Vera, 2009). Before they were driven to extinction, large herbivores in this part of Europe included the tarpan (wild horse), wisent (European bison), red deer, and aurochs (wild cattle). The tarpan and aurochs are extinct, but Konik ponies and Heck cattle are able to act as functional equivalents, occupying a similar ecological niche. Prior to the establishment of the reserve, the dry areas in the southeastern portions served as a nursery for willow trees. The concern that a dense woodland would eventually develop, significantly reducing the value of the habitat for

water birds, led to the incorporation of Vera's innovative 'nature design studio,' which refabricated an association of large herbivores (including Konik ponies, heck cattle and red deer), within the reclaimed delta landscapes to create a Serengeti-like landscape. In doing so, Vera broke away from traditional ecological models, such as those prescribing to the 'climax' vegetation doctrine – the concept that in any given region, vegetation would succeed to a natural state of forest – developed by American ecologist Frederic Clements in 1936 (Clements, 1936). While the results were astonishing and populations of birds and small mammals recovered, they exhibited boom and bust cycles on the reserve that provoked controversy from farmers and citizens who viewed the inability of fenced in animals to migrate in search of food or cover to be inhumane and cruel. In the winter of 2017–2018, nearly 3,000 deer, horses and cattle starved to death, dividing the Dutch public (Lorimer & Driessen, 2013). For the reserve managers, this was part of a natural process: numbers had built up during a succession of mild winters and climate was a natural regulator of wildlife populations. But for many Dutch citizens, allowing horses to starve was an outrage with no place in a modern, caring society. This led to demonstrations and individuals feeding hay to the animals despite police arrests. In hindsight, the mass mortalities could be viewed as the inability to connect the reserve to the Veluwe (a 1100 km² forest-rich ridge of hills nearby) as well as the failure to introduce large predators into the area. As a result of protests, the Van Geel Commission advised that management of the terrain should incorporate traditional methodologies that utilize the carrying capacity of the reserve, thereby curtailing the experimental principle of 'letting nature go its own way'. The upshot was a reduction of the numbers of remaining animals by culling (shooting), which led to another outburst of protests and court cases (Oliveria-Santos & Fernandez, 2010; Nogués-Bravo et al., 2016; Givetash, 2018).

The Oostvaardersplassen scenario illustrates the hard lessons learned and ethical challenges entangled within the rewilding debate. In this case, rewilding's ecological pragmatism needs to be tempered by widely held ethical views toward animal wellbeing.

The Rise of the Mega-Herbivores

Although from different cultures and continents, ecologists Sergey Zimov and Josh Donlan and company continue to stress the same issue: namely, that mega-herbivores play a huge (and often disproportionate) role in the functioning of ecosystems. Their belief is that conservation should broaden its prospects and reestablish functional species whose presence generate flows of ecological connections and permit ecological interactions rather than rely on human interventions to guide the future path of natural systems (Jepson & Blythe, 2020). The paleoecological knowledge of the dynamics occurring for millions of years among mega-herbivores, grasslands and fire, and the subsequent rise of diverse grassland ecosystems rich in plants and animals, is reinstating rewilding as a novel solution to the downgrading of ecosystems and subsequent environmental concerns. Current insights in paleoecology have confirmed that after the fall of the dinosaurs during the Cretaceous period, massive natural regions of the Earth began to be dominated by grasslands (Stromberg, 2011). Perennial grasses adapted to withstand and thrive in areas of disturbance and gained a foothold in areas subject to major climatic and periodic upheaval. Extreme temperature events, wildfires, landslides, rivers shifting their course, ashfalls from volcanic eruptions, and floods, droughts, cyclones, and sandstorms created the conditions for grasses to evolve and flourish. Of utmost importance with respect to rewilding was the considerable presence of abundant megafauna that played a huge role in the maintenance of grassland ecosystems (e.g., by creating disturbances through grazing or trampling of trees or by the

spread of grass seeds within dung). These grassland ecosystems, in turn, adapted to the presence of mega-herbivores and subsequently were characterized by a variety of microhabitats that produced abundant and diverse natures, including *resilience* to being trampled, buried or eaten and the ability to spread to more stable landforms (Janis, 1993).

It has become increasingly evident that all terrestrial megafauna are undergoing significant population reductions worldwide: of 74 extant species of large herbivorous mammals with body masses ≥ 100 kg, 44 (~60%) are threatened with extinction. The loss of this functional group was initiated 10,000-50,000 years ago (Ceballos et al., 2015; Wroe et al., 2004). As we saw in Chapter Two, dwindling numbers were most likely due, in part, to overhunting by humans during the late Pleistocene. Megafauna have the potential to perform substantial roles that contribute to the operation of ecological systems by triggering physical disturbance, scattering seeds great distances, ingesting fibrous vegetation which can benefit smaller herbivores, reducing fire-risk and hastening the rate of nutrient cycling. The considerable loss of this role at the end of the Pleistocene had remarkable effects on fire regimes, nutrient cycling, food web complexity, and plant community structure. A contemporary decrease in megafauna has had similar effects on terrestrial ecosystems and community structure worldwide and is a source of current conservation concern. The subsequent demise, domestication and simplification of these mega fauna interactions is what many areas of rewilding seek to reverse (Jepson & Blythe, 2020).

Equids as Ecosystem Engineers

The eco-engineering prospects of equids have moved to the forefront in rewilding efforts as evidenced by the Pleistocene rewilding project and the Oostvaardersplassen experiment in nature restoration (Zimov, 2005). It is important

to note that numerous ecosystem processes worldwide have been inadvertently restored through equid introductions to novel environments, a detail often neglected when only historical 'native' ranges are taken into account. As aforementioned, huge scale herbivory and consumption of undigestible fibers has been lost from the North American landscape since the late Pleistocene. Because equids possess a cecal hindgut digestive system they are capable of consuming extremely coarse fibrous biomass. The return of this functional trait has important consequences for nutrient cycling and community structure (Hofmann, 1989).

A case in point involves the large mesquite trees (*Prosopis pubescens*) found along the Salt River within the Tonto National Forest in Arizona. These trees function as shade trees with huge significance to all wildlife in the area. They rely heavily on their seeds being spread through animal behaviors, including the spread of horse manure, which provides the bed for fertilization of seeds (Salt River Wild Horse Management Group, n.d.a). Fecal matter from equids additionally improves overall fertility of the soil and promotes annual re-growth in the area (Ostermann-Kelm et al., 2008). Decomposition in dryland systems is largely driven by abiotic photodegradation due to the restricted availability of moisture. This conversion of coarse woody biomass to moist pre-digested and bacterially enriched dung by wild horses may alter decomposition pathways in desert systems (Naundrup, & Svenning, 2015). Male equids mark territories with dung middens which can become quite large and may thus be able to retain moisture resulting in increased rates of microbial decomposition and influencing carbon cycling, carbon sequestration, and the dynamics of other nutrients (Ransom & Kaczensky, 2016). Other riparian ecosystem benefits, according to horse advocates, relate to the presence of eel grass (*Vallisneria americana*) in the Salt River ecosystem which can become a problem in the summer months as it clogs the river and decreases water flow. The wild horses

residing here are the only species reducing the freshwater eel grass. In doing so, they keep the river from becoming stagnant and contribute to increased water flow for the Salt River Project and energy production. On the other hand, many, such as Mark Larson, president of the Maricopa Audubon Society, contend that the eel grass is needed for survival of fish and aquatic species in the area and that the horses are a classic case of animals overusing their resources. He further argues that when the grass is gone, hungry horses will eat whatever they can find, including willow and cottonwood seedlings. This decreases succession in these important riparian trees. In his words: "Cottonwood and willow are like candy to horses" (Krol, 2019, p. 1).

Additional disputes over the effect of equids on ecosystems include the impact of wild horse hooves: some say they may help improve aeration of the humus and keep fungi down. Others contend, however, that they lead to increased soil erosion. Equids have been known to act as "dowers," with the ability to detect underground water near the surface and dig down to it with their hooves, creating wells providing sources for other smaller species to drink. No doubt wild horses provide a diet for predators and scavengers, such as mountain lions, bob cats, coyotes, foxes and vultures. Knowledge on how introduced megafauna species affect these cycles is lacking, yet such knowledge is crucial in future ecological research, given that nutrient cycling worldwide was once strongly influenced by megafauna species (Doughty et al., 2016).

A Research Agenda for Rewilding Equids: Integration into Policy

In order to make rewilding useable in public and government policy, a clear agenda is needed that identifies what information and processes are essential to the success of rewilding initiatives. As outlined by Ecologist Nathalie Pettorelli and colleagues (2018), rewilding criteria and research goals are crucial. Such criteria include the ability to identify what the management targets and potential

management actions are and provide an explanation for how these components fit together so that adequate monitoring and evaluation plans can be drawn up early on. Rewilding is distinguished by an elevated degree of unpredictability in its ecological outcomes and will generally fluctuate with local conditions and the type of rewilding considered (i.e. Pleistocene, passive, trophic, ecological). Such uncertainty may be especially high when considering the introduction of new keystone species (such as free-roaming horses). One of the major handicaps to rewilding is the perceived negative impact of rewilding projects on local communities. Some people living close to where rewilding initiatives are being implemented might suffer the costs of enhanced wildlife, in the form of crop and livestock depredation or competition (e.g. ranchers in the case of wild horses) while others may benefit from wildlife through ecotourism or associated ecosystem services. A better understanding of the potential socio-economic impacts of rewilding, for each type of rewilding considered and in different socio-economic contexts, needs to be developed to be able to understand and mitigate against such unintended consequences.

To assess how best to support the emergence of novel ecosystems in various socio-economic and ecological contexts, research and environmental manipulation may be necessary. Current policy drivers, however, could present barriers to conducting these necessary large-scale, long-term ecological experiments. Moreover, revision of environmental policies and legislation that currently focus on existing or historical assemblages may be essential in order for rewilding to fully reach its conservation potential (Pettorelli et al., 2018). Two policy areas are particularly relevant to rewilding and may need specific attention: biodiversity policy, and agriculture and land-use policy. These areas will be further discussed in Chapter Six.

Nature Reconstruction: A Path Forward to Collaboration

Wilderness management that seeks to preserve “pristine nature” has been criticized for representing abstract human conceptions of “wildness” that are nonetheless managed. Opposition to this approach contends that the production of such pristine wilderness is locked up within geographical boundaries and allowed to exist only at the whim of legislators and government policy. Similarly, it has been argued that the management of free-roaming horses in Wild Horse Territories or Herd Management Areas seeks to create a “thriving ecological balance” in government designated, pre-determined areas that are unsuitable for equids. Due to the fact that they lack a coevolutionary record with the various ecosystems in which they have been introduced, wild horses, along with other introduced species, have traditionally been regarded by most conservation biologists as drivers of environmental uncertainty and instability. Growing evidence, however, has indicated that introduced species react to various ecological settings similarly to other non-introduced species and undergo rapid co-evolution with native species. As opposed to being drivers of transformation and uncertainty, introduced species should be viewed as passengers of such change.

Acknowledgement of the possibility for the use of equids as ecosystem engineers is being fostered by the increasing concept of ‘rewilding’, which seeks to proactively introduce megafauna in order to provide refuge for these species and to restore lost ecological processes. While ‘rewilding’ often argues for intentional introductions of taxon substitutes, much remains unknown about the contribution of already introduced populations to global conservation goals. Studying introduced wild horses as creatures with value to global conservation goals and as members of an ecologically important functional group opens new paths in research and allows for innovative insights. If introduced horses were treated as ecological assets,

conservation efforts to work together to provide proper welfare for these populations could likely find synergy with other conservation goals such as the restoration of predators, relocation of various equid populations and the preservation of landscape connectivity. Ultimately such a position could enhance valuing the wildness for humankind by offering a more captivating vision rather than working to facilitate what might be perceived by animal activists and animal welfarists as extermination in an age of global extinction.

CHAPTER SIX

WILD HORSE POLICY: THE "NEXT" WEST

The greatest good for the greatest number made a huge amount of sense as a principle when you had a relatively small elite making the policy decisions who could stand outside the whole system and say, 'I know what's the greatest good for the greatest number. And, by God, I'm going to do it.' Now in a modern democratic situation where everybody is competing for defining what the problem is and what the solutions are, it's never as clear as it was in those days what the greatest good for the greatest number really is. (Pinchot, 2008)

Seeking Protection as an Endangered Species

In June of 2014, two non-profit animal and wild horse advocacy organizations, filed a petition with the U.S. Department of the Interior's Fish and Wildlife Service and Secretary of the Interior Sally Jewell requesting that North American wild horses be classified as threatened or endangered on all U.S. federal public lands under the 1973 Endangered Species Act (ESA). Following the U.S. Court of Appeals denial of an emergency motion to halt the gathering of 800 horses from the Checkerboard Herd Management Area in Wyoming, the listing was deemed necessary by petitioners to provide needed regulation of wild horses and to halt further exploitation. At the time the petition was filed, six states had already lost their wild horse populations—Missouri, Iowa, Arkansas, Texas, Oklahoma and Kansas (Friends of Animals, 2014).

The plaintiffs, Friends of Animals (FoA) and The Cloud Foundation argued that wild horses face the threat of extinction due to at least four factors identified within the ESA. Specifically, they claimed that: 1) the *distinct population segment* of wild horses is endangered by habitat loss, particularly from cattle grazing, mining, energy exploration, and urban expansion; 2) as a species, wild horses (mustangs, see Appendix A definitions) are threatened by human utilization, including mustang removal and sterilization as well as continued agency authorization of commercial livestock grazing; 3) existing regulatory mechanisms are inadequate to manage the

threats that wild horses face and may, in fact, constitute an independent threat to their survival; and 4) natural and anthropogenic factors have fragmented the range of wild horses resulting in small populations, which promotes increasing threats to genetic diversity. The petition further declared that wild horse habitat had decreased by 40 percent (from 53 million to 26.9 million acres) since the Wild Free Roaming Horse and Burro Act (WFRHBA) was signed into law by President Richard Nixon in 1971. Moreover, it argued that WFRHBA has failed to accomplish its assigned task of maintaining “a thriving natural ecological balance among wild horse populations, wildlife, livestock, and vegetation and to protect the range from the deterioration associated with overpopulation.” Finally, the petition supported what the BLM refuted long ago: The wild horse is a native species that was driven to extinction until Spanish explorers reintroduced them to North America in the 1500s. According to the Plaintiffs: “it is vital to the survival of this population segment of wild horses that it becomes federally protected under the Endangered Species Act” (Friends of Animals & The Cloud Foundation, 2014).

Although these issues were crucial to the Plaintiff’s arguments, the primary concern revealed in the petition is the claim that the misclassification of wild horses as a *non-native species* has been politically, rather than scientifically, driven. As articulated by FoA’s Wildlife Law Program Director Michael Harris:

In light of BLM’s intention to virtually wipe-out Wyoming’s remaining wild horse population, the time is now for the U.S. Fish and Wildlife Service to respond to our petition to place these animals on the list of endangered or threatened species. With one agency—the BLM—already failing the horses, we ask USFWS to treat the situation in Wyoming as an emergency requiring immediate action. And given the strong evidence that wild horses are a distinct population of a reintroduced North American native species, they clearly deserve our protection. (Friends of Animals, 2014)

The BLM is obligated, under the WFRHBA, to protect wild free-roaming horses as an integral part of the natural system of public lands; however, the agency is also required to provide for multiple use, under the Federal Land Management Policy Act

of 1976 (FLPMA) and manage all wildlife in a manner designed to achieve and maintain a thriving natural ecological balance. While the BLM claims that wild horse removals are necessary to protect rangeland health, the Plaintiffs seriously doubt the motives and ecological science behind the agency's methods in their calculation of appropriate management levels (AMLs). FoA's belief that the BLM's practices are biased in favor of cattle is due, in part, to the following: 1) The BLM manages 245 million acres of public land in the U.S.; livestock grazing is authorized on 155 million acres, while wild horses are permitted on 26.9 million acres; 2) The vast majority of Wild Horse Herd Management Areas are shared with livestock (over 80 percent of BLM rangelands grazed by livestock are absent of wild horses); and, 3) As of 2018, the BLM allowed 315,000 cow/calf units and only 20,000 horses within the states of Oregon, Washington, California, Nevada, and Utah (BLM, n.d.c). The numbers, however, can be misleading, as the interpretation does not take into account unique physiological differences in the amount of forage required for each species. As non-ruminants, horses require more forage per body weight while ruminants (such as cattle) are more efficient at obtaining nutritional needs from grasslands. Furthermore, horses are grazing year-round whereas cattle are intensely managed and are only allowed in pastures for a prescribed number of weeks before they are moved.

Still, the anger directed at the BLM and accusations of favoritism displayed towards livestock operators persists as evidenced by the comments shared by the president of FoA, Priscilla Feral:

The tragedy of horse roundups exists because the BLM appears devoted to turning arid western public lands into feedlots for cows and sheep to appease cattle producers. Friends of Animals finds this morally and ecologically reprehensible, as wild horses are driven off lands to leave the bulk of water, forage and space for two domestic animals owned by ranchers. We oppose the BLM's scheme of privatizing wild horses and insist all roundups end. (Friends of Animals, 2014)

Edita Birnkrant, Campaign Director for FoA, further alleges that the BLM, cattle and sheep ranchers are guilty of the crimes currently being committed against wild horses.

The BLM has renounced its duty to protect wild horses and burros in favor of acting solely in the interests of those whose hatred and intolerance of wild horses fuels the roundups—ranchers. The sadistic roundups occurring right now in Wyoming are ripping families of wild horses apart, terrorizing them with helicopter chases, separating foals from their mothers and imprisoning them in squalid holding facilities where their fates are unknown and where horses can be sent to slaughterhouses. If FoA doesn't get a timely response to our Endangered Species Act petition from Sally Jewell, (Secretary of the Interior) we will immediately pursue our legal options in court. There is no more time left for America's wild horses. (Friends of Animals, 2014)

The Endangered Species Act was designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation." Given that the 2014 petition itself revealed there were some 34,000 wild horses on public lands in the west at the time (with additional estimates from BLM closer to 50,000), natural resource managers could remain confident that listing wild horses as an endangered species was quite doubtful. The petition was more likely used as a mechanism for wild horse advocates to voice their longstanding dissatisfaction with the BLM's approach to public land management and to the management of free-roaming horses, specifically, under the WFRHBA. Such a strategy might also play into an attempt to stall the BLM in their efforts to conduct business as usual (their continual removal of wild horses from public lands). As noted by environmental philosopher Ben Minteer, utilizing the lever of conservation policy to advance animal welfare/rights arguments is a common method employed by those supporting the compassionate conservation movement (see Chapter Three) (Doremus, 2014; Endangered Species Act, 1973).

As expected, the U.S. Fish and Wildlife Service rejected the proposal after a ruling that the claims did not present sufficient evidence to support that wild horses are a *distinct* population segment. In a new 90-day finding that declined efforts to

research the matter any further, the agency concluded that in essence, "a horse is a horse." Furthermore, the agency contended that, while individual behaviors between wild and domesticated animals belonging to the same species may vary, the petition lacked substantial information that could show that the North American wild horse should be considered separate from other horse populations as a result of such behavioral differences (Lee, 2015).

In 2018, the petitioners re-filed for endangered status, this time seeking an approach that would involve only the isolated Pryor Mountain Wild Horse Herd. According to FoA, the new listing was warranted as scientific evidence had recently confirmed that this remote population was genetically (as opposed to *behaviorally*) unique. Dr. Gus Cothran, professor emeritus at the Texas A&M School of Veterinary Medicine, confirmed that the roughly 155 horses, located on the Pryor Mountain Wild Horse Range just north of the Wyoming border, are indeed descendants of the mounts of Spanish conquistadors who had arrived in North America in the 1500s. Some of the Pryor horses carry a rare allele (version of a gene) that is traced back to original New World "Spanish" type horses. These saddle breeds were developed from the original Spanish and Portuguese (Iberian) horses that were brought to the Americas during the 14th century. Many Pryor wild horses' primary bloodline descends from Spanish Barbs and exhibit primitive markings such as dorsal stripes, transverse stripes across the withers, and horizontal "zebra" stripes on the back of the forelegs. These Montana mustangs are exceptionally rare, according to FoA's wildlife law program director Harris, due to the population's hundreds of years of isolation and researchers' ability to trace their lineage back to some of the earliest wild horse herds observed by Lewis and Clark on their momentous *Voyage of Discovery* in 1804. Of utmost importance to FoA is their dedication to seek protection for herds such as the Pryor's that, in their view, are most at risk for continued

threats of agency mismanagement (Brown, 2018; Reid, 2016; The Cloud Foundation, 2013).

The persistent petitioning by animal advocacy groups raises significant concerns surrounding their primary motivations and ultimate management and policy goals. Their lack of confidence in wild horse management under the jurisdiction of the BLM has prompted them to seek assistance from the ESA in attempts to secure mustang protection and provide for their welfare. Such actions offer insight on important questions that conservationists, land management agencies and policy makers alike are asking: What should conservation laws protect and how should we determine success in our efforts to protect species and their crucial habitat? Assuming their numbers were critically low, are wild horses – with their perceived “non-native” categorization and “unauthorized” status by government agencies – the kind of entity that could qualify for protection under the ESA? What does the ESA offer to the horses (and perhaps more importantly, to the wild horse advocates themselves) that the WFRHBA does not? How does the perception of nativeness factor into the debate surrounding legally protected areas for the horses to roam? The belief by FoA is that WFRHBA is failing to live up to its original intent to maintain healthy horses on healthy rangelands. Could the idea of managing a *cultural and historic icon* be better served if they were managed similarly to other protected wildlife species under the Endangered Species Act? Many endangered species and most wild horse populations are protected on designated public rangelands, governed by federal law. Might wild horse needs be better served if the protected areas they roam fell under the state jurisdiction or managed by private organizations? Can various narratives from wild horse advocates and ranchers provide clues?

As evidenced by the details surrounding the 2014 ESA petition, the Old West, with its customs and land management policies, has been primed for a major transformation. A demographic shift is altering the region from sparse populations to fast-growing urban centers and has modified the economy from one of resource extraction to recreation. Additionally, the West's arid environment has increasingly been affected by extreme weather and change in climate. As discussed earlier, a heightened desire for implementation of compassionate conservation and rewilding will most likely affect the policies that shape public land management and the future for the mustangs themselves. Political discourse surrounding desired management for wild horses is firmly rooted in the weaving together of historical events ("narratives") in an attempt to shape the present while also preserving and extracting from the past. Such narratives are the product of unique perspectives. Although they do describe partial reality – for example, the economic or environmental changes occurring within the region – they also portray a constructed reality or aspects of what the narrator aspires for the region, as well as the horses. Changes to environmental policies that regulate wildlife and affect western rangelands will need to also reflect the reality of its continual physical transformation while simultaneously working with the Old West, including those indigenous voices who have traditionally been absent in such policy, and New West narratives and identities (Lybecker, 2020; Shenhav, 2006). Understanding the many and often opposing narratives of where the region has been and where it is today are crucial in efforts to determine a desired trajectory for where it *could* be heading tomorrow. Will this be a "Divided" or "Unified West"?

Many stakeholders involved in the wild horse management are questioning why the perceived "unwise" public-land grazing policies have continued to the present. In this chapter, I seek to address these policies involving both wild horse

protection and rangeland use by livestock grazers. The chapter begins with insights into the frontier myth and the bioregional descriptions surrounding the Old West. This is followed by a brief exploration of the historical aspects of western land acquisition and property rights with a particular focus on grazing rights. The goal here is to describe how livestock grazers acquired and maintained their hold on the range, despite (in the view of anti-grazing activists) their lack of secure property interest in public lands and the perceived ecological consequences of livestock grazing in arid environments. This sets the stage for the interpretation of current land use and frustrations experienced by wild horse advocates (supporters of the New West) and cattle grazers (who cling to the values of the Old West). I then then investigate the influence of various statutes on agencies' ability to successfully balance the welfare of mustang populations with escalating stakeholder tensions and ecosystem concerns of western rangelands. Understanding the debates surrounding rangeland management in the western United States, the changes the region is facing and the policies that regulate free-roaming horses requires identification of the demographic, economic, cultural and environmental shifts occurring in the region. It also requires an understanding of the various interpretations of the statues designed to regulate rangelands and acknowledgment of public support or opposition to land management efforts.

The chapter concludes with a discussion of legal considerations and an alternative avenue for mustang management as well as the necessity for collaborative efforts moving forward. My goal here is not to demean or exalt all aspects of the Old West. Instead, I seek to understand the important lessons gained from the 2014 ESA case and the contrasting narratives represented by wild horse advocates who continue to profess their lack of confidence in wild horse management under the jurisdiction of the BLM and USFS as well as those supporting livestock

industries' interest. My hope is that the policy and statutes of the "Next West" will be inspired by a blending of the Old traditions, including those voices that were historically absent from the debate and New west values and customs. Such policy will reflect the diverse interpretations of nature and ecological science while also recognizing the care and concern for the mustangs' welfare.

Culture Clashes and the Frontier Myth

The hope of the future lies not in curbing the influence of human occupancy – it is already too late for that – but in creating a better understanding of the extent of that influence and a new ethic for its governance. (Leopold, 1986, p. 481)

Many westerners have long begrudged the truth that the public domain – that area that was at one time owned by the United States and subject to transfer through federal laws – is, in fact, public; belonging not to the state or to private interests but to the federal government. Since Uncle Sam took control of the public lands in the 18th and 19th centuries, easterners and westerners have debated how best to manage and dispose of them (Hibbard, 1924). The questions of what to do with the public lands and whose interests they serve have long polarized not only the West and the East, but the West against itself. An explanation for this tension is rooted in a long history of controversy in the West.

In many aspects, the case of the wild horse management dispute can be viewed as a continuation and a manifestation of this heritage, revealing deep-rooted agendas that exist on both sides of the issue. On one extreme, some opponents of the Wild Free-Roaming Horse and Burro Act (primarily livestock operators) seek policy that would ensure much of current federally owned public lands become the property of states (Transfer of Public Lands Act, 2012). This would involve "divestiture" – selling off federal land for a predetermined purpose. In such a scenario, the land would not be available to all Americans. Mustanging and the sale of wild horses for slaughter could theoretically resume. On the other extreme, a few

involved in the animal rights faction have at the core of their agenda a perception that range resources are divided unequally and believe efforts to end the consumption of meat (and therefore all public land grazing for cattle and sheep) would end problems for wild horses (Happy Cow, n.d.; Friends of Animals; n.d.). Convinced that such actions would be devastating to wild horse populations as well as to the ecosystems they inhabit, the majority of policy makers, conservationists, environmentalists and horse advocates do not support either of these positions. The theoretical transferring of land ownership, for example, would negate the valued concepts in the United States set down by the founding fathers as a nation being constructed "for use by all" (Derner et al., 2014; Conservation Coalition of Oklahoma, n.d.).

Future disposal (of federal lands) should be only those lands that will achieve maximum benefit for the general public in non-Federal ownership, while retaining in Federal ownership those whose values must be preserved so that they may be used and enjoyed by all Americans. (Congressional Research Service Report, 2007)

At the same time, beyond the unlikely expectation that all Americans would become vegans, the call to switch entirely to plant-based foods, according to author and rewilding conservationist Isabella Tree, ignores one of the most powerful tools we have to mitigate the ills of soil degradation: grazing and browsing animals.

We should be encouraging sustainable forms of meat and dairy production based on traditional rotational systems, permanent pasture and conservation grazing. We should, at the very least, question the ethics of driving up demand for crops that require high inputs of fertilizer, fungicides, pesticides and herbicides, while demonizing sustainable forms of livestock farming that can restore soils and biodiversity, and sequester carbon. (Tree, 2018)

The ongoing conflicts and criticisms surrounding policy regulating mustangs and livestock grazing as a legitimate use of U.S. public rangelands as well as the livestock industry's perceived ties to the BLM and its effect on management practices, can best be explained through an awareness of the ongoing culture clashes between the rural residents and indigenous cultures embedded in various traditions

of the Old West and those in-migrants and seasonal visitors whose opposing values continue to propagate a New West. The history and development of the local rural economies can shed light on the transitioning of the philosophies surrounding their interactions with the ecological landscape. Such a cultural understanding of land management in the American West not only illustrates why disputes over public land rights, and mustang management continue to flare up, it reveals why they are so difficult to extinguish.

The cultural and economic positions that define rural areas of the American West (bioregionalism) have historically been tied to the region's vast, landscapes teeming with abundant natural resources and hugely embedded within federally managed public lands. The Old West with its mythical "frontier," awakens images of cattle drives, wild horses and seas of wide-open spaces, dotted with booming, lawless cow towns (Bennett & McBeth 1998; Shumway & Otterstrom, 2001). The paradigm of this narrative describes how the west was "won" and the how the immense, unrestricted wilderness territories that encompass its awe-inspiring views were "tamed." The rangelands of the Old West create images of iconic cowmen and rugged pioneers living off the land, tough characters digging for gold or other precious minerals, and innovative self-made entrepreneurs reaping what the wild countryside could offer. This is a narrative of self-made pioneers and rural communities closely connected to industries that are reliant on resource extraction and commodity production, including forestry, ranching, mining, and fisheries (Lybecker, 2020; Krannich et al., 2011; Wolters & Steel, 2020).

For U.S. scholars, these Old West iconic images (evoked by the word "frontier") are perpetually linked to the legacy of historian Frederick Jackson Turner (1861–1932). Turner's thesis about the "closing of the frontier" in the 19th century, reflects the philosophy of the land-revering ideals of Jeffersonian Agrarianism and its

20th century successors the Progressives (Billington, 1961; Nash, 1967). In his ground-breaking 1893 essay "The Significance of The Frontier in American History," Turner cast the frontier as both a moving line of settlement and the fountainhead of American individualism and democracy. While Turner's frontier was an objective geography, one produced by demographics and one that could be mapped, it also moved beyond history and location; where civilization clashed with the wilderness and was renewed by nature and inspiring an almost transcendentalist approach towards nature:

The wilderness masters the colonist. It finds him a European in dress, industries, tools, modes of travel, and thought. It takes him from the railroad car and puts him in the birch canoe. It strips off the garments of civilization and arrays him in the hunting shirt and the moccasin. (F. J. Turner, 1935)

At the same time, Turner's principles reveal the flaws and prejudices of his time. Although his philosophy addresses the injustices of disadvantaged 19th century Americans, he fails to take into account the concerns of Native-, African-, Hispanic-, and Asian-Americans. Furthermore, he argues for the suppression of these groups if they happened to stand in the way of "progress." The battle for land at the frontier, in Turner's mind, is a "meeting point between savagery and civilization" (Billington, 1961, p. 38). The New Western historians appropriately pointed out the inadequacies of Turner's thesis; particularly, its ethnocentric perspective, politically incorrect language, its failure to explain the post 19th century West, and its celebration of a process that marked the termination of cultures and the demise of countless individuals.

Perhaps the most recognized work that fully represents New Western History's rejection of the frontier thesis is Patricia Nelson Limerick's *The Legacy of Conquest: The Unbroken Past of the American West* (1987). As historian Erik Altenbernd and American literary scholar Alex Trimble note, Limerick's criticism of the frontier thesis illustrates how Turner consecrates a triumphalist teleology of

Western expansion that “relentlessly trivialized the West” by celebrating the conquests of white men (Altenbernd & Young, 2013). Additionally, Turner denigrated place in favor of processes that distorted historical analysis by focusing almost solely on the early phases of settlement “when civilization had conquered ‘savagery’ at any one location”, Limerick argued, “the process – and the historian’s attention – moved on” (Limerick, 1987).

Although the frontier myth infiltrated the American mind for several generations and was perpetuated by Hollywood’s romanticizing of the Wild West (see Chapter Two) (Donahue, 2005; Richoux, 2012), scholars agree that the myth’s cultural appropriateness abruptly ended in the latter half of the 20th century. The political climate in America during the 1960s and 1970s highlighted rising concerns over the applicability of the frontier myth to pressing socioeconomic developments. Politically, the counterculture and civil rights movement were characterized by a fierce opposition to traditional American culture. The New Western History set to task populating the history of the American West with the overlooked peoples and non-human forces that shaped the region. New scholarship emerged highlighting the roles and influence of women, minorities, Native Americans, the environment and consumer capitalism (Wlasiuk, 2004).

With a move to announce the death of traditional American historical values, the frontier myth lost its central place in the American imagination. Remaining fragments of the frontier myth became politicized and came to symbolically distinguish the political opposition between the “New West” – on the Left – and the “Old West” on the Right (Tate, 2016; Richoux, 2012). On the surface, conservatives on the political right (primarily represented by ranchers and western rural residents who see their livelihoods threatened by an overreaching federal government), attach themselves to the frontier myth, fighting to protect the traditional values of Frontier

America against the reformist and revolutionary left. For those who retain the philosophy of the 1970s "Sagebrush rebels," or the 1990s "Wise-Use Activists" (Tate, 2016) the backlash against the federal government can be interpreted as an outcry against the 1976 Federal Public Land Management Act (FPLMA), and includes a desire to "put large parts of the federal holdings – the public lands of the West – into the hands of the states, localities, individuals and corporations (Popper, 1984, p. 61). The left (represented in Wild horse management debate by animal activists and environmentalists) promotes a political platform that, on the surface, announces the end of "Frontier America" and a desire to set land policy on a clear trajectory to retention, conservation and orderly, equitable development. Beneath the surface, however, both political sides cling to a sense of nostalgia for the "wildness" or autonomy represented by the frontier myth, visible through their political rhetoric (as we will see in the next chapter) including descriptions of wild nature, wild mustangs and the WFRHBA itself which represents the wild horse as "the pioneer spirit of America" (WFRHBA, 1971).

The "Natural West": Home on the Range

"There is nothing that will make the average westerner see red so quickly and so vividly as the question of the public lands" (Dern, 1926). Beyond the wildness in the *minds* of Americans – and particularly those new and old westerners who share the landscape where mustangs roam – concerns surrounding wild horse management must take into account the physical reality, with all the notions of topography, climate and evolving ecology that make up the landscape itself. What is it that defines this *place* we call "the West"? Is it aridity? Percentage of federal land ownership? A geographical marker often used in writing and research about the West? In *The Natural West* (2003), western environmental Historian Dan Flores

poses the questions ecologists and environmental philosophers continue to grapple with today:

When we talk about “restoring” the West, what in fact are we trying to recreate? Whose Natural West has this been all along? Is it evolution’s superorganism, which we Euro Americans have so long called “wilderness”? Or did the United States inherit a natural stage actually shaped by the very long human inhabitation? (Flores, 2003)

In order to answer these questions, Flores contrasts Turner’s frontier concept and images of the west (as a Darwinian process that shaped Americans) with the philosophy provided by the father of environmental history, Walter Prescott Webb. In *The Great Plains* (1931), Webb draws attention to the confluence between *ecological* realities and human adaptations – such as the use of windmills and barbed wire in semiarid grasslands – that are a part of the evolution of *cultures* in place (Flores, 2003). One of the insightful ways, then, for us to think about the human ecological past and attempts to regulate land policy is in the form of *bioregional histories*. It is not merely bioregionalism’s focus on ecology and geography that ties it to the central issues of western politics and diplomacy surrounding current land management disputes, but its emphasis on the close linkage between ecological locale and human culture and its implication that humans not only alter environments but also *adapt* to them.

While history has illustrated that human adaptation to the “Wild” West has not been easy, and biological productivity in these areas are low, western rangelands have long been occupied by various Euro-American and indigenous cultures – each altering the landscape through various means such as cultivation, fire or grazing – as they depended upon it to provide forage for domestic livestock, habitat for wild game, and sources of edible wild plants. In the past few centuries, rangelands have also been recognized for their value as watersheds for rural and urban uses, suppliers of renewable and nonrenewable energy resources and minerals, settings for

recreation activities, and of course, valuable habitat for endemic species. Regardless of their contributions to lives and livelihoods, however, U.S. rangelands historically have been considered less economically important or valuable than other land types. After Thomas Jefferson dispatched teams of explorers to learn about his newly acquired Louisiana Purchase, expedition mapmaker Edwin James reported that the region:

Is almost wholly unfit for cultivation, and of course, uninhabitable by a people depending upon agriculture for their subsistence. Although tracts of fertile land considerably extensive are occasionally to be met with, yet the scarcity of wood and water, almost uniformly prevalent, will prove an insuperable obstacle in the way of settling the country. (Meinig, 1993, p. 76)

This landscape would later become to be known as American rangelands. After President Abraham Lincoln informed the nation on July 4th, 1861 that the purpose of America's government was "to elevate the condition of men, to lift artificial burdens from all shoulders; to clear the paths of laudable pursuit for all; to afford all an unfettered start and a fair chance in the race of life" (Lincoln, 1861). He followed through with the Homestead Act of 1862 and the Mining Law of 1872. For a mere ten dollars, the Homestead Act guaranteed that any current or future citizen could claim a homestead of up to 160 acres of government land and "improve" the land by putting it to use as a family plot. This meant erecting a dwelling and farming the soil for a period of five years. If the claimant did so for the allotted period, they could then gain ownership of their land free of charge. The incentive to move and settle on western territory was open to all U.S. citizens, or intended citizens, including those who were single, as the act did not define what it meant to be the "head of a family," save for an age restriction of twenty-one years. While the Act allowed African Americans, persecuted and famine-struck immigrants, and even women a chance to find freedom and success in the West, indigenous cultures were excluded from this

“fair chance” and were forced from their lands and onto reservations to make way for homesteaders (Coggins et al., 2007; History.com, 2022).

The presumption, by Congress, of a future nation of small farmers with agricultural knowledge limited to the Eastern states’ experiences, resulted in several devastating social and ecological consequences for the developing nation which have lingered in current efforts to appropriately address land management issues. At the outset, the White settlement west of the 100th meridian was slow, uneven, sporadic, and, in terms of the national goals at the time, disastrous as only a small fraction of the Intermountain Area was suitable for crop production. In fact, a considerable amount of the western rangeland was *never* claimed because federal law limited the permissible homestead size and because much of the land was considered worthless. Furthermore, lands distributed to the railroads were distributed in checkerboard patterns on either side of the rights-of-way. Congress in the 1860s assumed, quite incorrectly, that these lands would all end up in private agrarian hands. Consequently, millions of acres of federal lands now landlock each other, creating numerous access and managerial difficulties to this day. Although successful agricultural operations for a single family on arid public rangelands would require far greater than the original 160 acres allowed, early livestock operators discovered the region’s ability to produce abundant forage for livestock (Coggins et al., 1982).

Today rangelands are recognized as those federal lands primarily located west of the 100th meridian where the climate is too dry for non-irrigated farming and precipitation is highly variable. These highly disputed over regions are defined by the United States Environmental Protection Agency as: land in which the native vegetation (climax or natural potential plant community) is predominantly grasses, grass-like plants, forbs, or shrubs suitable for grazing or browsing use (U.S. Environmental Protection Agency, 2022). The huge majority of publicly owned

rangelands in the U.S. are managed by the BLM (around 167 million acres) while the USFS manages approximately 95 million acres (the National Park Service and U.S. Fish and Wildlife Service manage a very small portion). Rangelands encompass 36% of the total land mass within the United States borders, however, the percentages are much higher in the eleven western states (roughly 53%).

These same rangelands are home to the BLM Herd Management Areas and USFS Wild Horse and Burros Territories where the wild mustangs roam. Greater than 90 percent of wild horse protected areas overlap designated grazing allotments for cattle and sheep. Because public lands are mandated by federal law to be managed for multiple uses, this is yet another source of contention for animal activists and animal welfarists desiring increased protected areas for the mustangs to roam.

Rangeland Management Disputes and Public Land Grazing

Although roughly 400 million acres of rangeland in the U.S. are privately owned, ranchers (cattle and sheep graziers) may lease sections of federal or state rangelands and pay a fee determined by the amount and type of grazer and the extent of time for which livestock are on the land. The federal grazing fee (a source of contention among wild horse advocates for its perceived low rate) was set at \$1.35 per animal unit month (AUM) in 2019 for public lands administered by the BLM and \$1.35 per head month (HM) for lands managed by USFS and applies in 16 Western states. State grazing fees range from \$10/AUM in Arizona and Texas to \$49/AUM in Nebraska. An AUM or HM — treated as equivalent measures for fee purposes — is the use of public lands by one cow and her calf, one horse, or five sheep or goats for a month and is determined by BLM and USFS as the amount of forage allocated to each animal based on nutrient needs and carrying capacity of the land. Horses are larger and have unique grazing patterns due to their digestive physiology and increased energy needs compared to ruminants, such as cattle and

sheep which are more efficient digestors. Still, this distribution of forage is a source of dispute and perceived inequity on the part of wild horse advocates.

Further debate on livestock grazing has been fueled by open-range laws. In several states, such as Arizona, landowners are required to fence cattle out rather than in; thus, cattle are hypothetically allowed to roam free. Presently, open-range laws can conflict with urban development as occasional stray cows, bulls, or even herds wander into subdivisions or onto highways. On October 13, 1996, Dr. Patrick Shipsey, a resident in a rural Eastern Oregon community, gunned down eight cattle that repeatedly broke through his fencing and trespassed on his property. For most cattlemen, slaughtering cattle is a fundamental function of livestock operations in a business devoted to feeding America's families. However, Dr. Shipsey is not a rancher, and his shooting of livestock wandering from his neighbor's ranching operation enraged the ranching community, consequently labeling him a cold-blooded murderer. Shipsey's act of frustration toward trespassing livestock on his property ignited another round in the great western "open range" war and intensified the debate over the present-day validity of ancient customs drawing its roots from the frontier days of the Old West (Donlan, 1999).

As urban sprawl extends into what historically appeared to be limitless pastureland, cow-friendly open range laws have come under new scrutiny, criticized as anachronistic throwbacks to the Wild West days before interstate highways and tract homes. "People have been killed in collisions with large cows," according to Daniel Patterson, former Arizona state representative from Tucson who, in the early 2000s lobbied to minimize the rights given cows and their owners in his state. "We need to get rid of this antiquated law from the 19th century. It's important for ranchers and other livestock owners to keep their cattle where they belong" (Patterson quoted in Lacey, 2010). Patterson's bill, which pushed for an end to

Arizona's open range law, encountered resistance from the Arizona Cattlemen's Association and has yet to gain traction. Currently, on roadways in open-range states, ranchers are not liable for cow-car collisions if they demonstrate they attempted to keep their cattle on their land. Furthermore, according to cattleman Patrick Bray, "The chances of hitting wildlife are probably higher than hitting livestock." Still, in May 2010, a Border Patrol agent was killed after his vehicle hit a bull one late night on U.S. Route 281 in South Texas. It was the second such fatality, following the death of an agent whose vehicle struck a cow on Arizona 86 west of Tucson four years previously. In other free-ranging skirmishes, a man from the border city of Douglas, Victor Eastridge, claimed he had cows come up onto his front porch, knocking down everything in their path. Although he put up fencing on his 40 acres, he claims the "aggressive animals" still managed to force their way onto his property. According to Eastridge, "I am sure there was a time when this (open range) law made sense, but today it does nothing except benefit the rancher at the expense of me and my neighbors and other citizens around the state." Eliminating the law, in the view of Vice president of the Arizona Cattleman's Association, Patrick Bray, however, would put undue hardship on ranchers. In his words:

We live by the policy of good neighbors...Ranchers try to maintain their fences as best they can. But it takes a lot of work, and cattle have a mind of their own. To put the liability on the ranchers if an animal gets out would be devastating to our industry. (Lacey, 2010)

Whether it be cattle, deer, elk, pronghorn, or wild horses, the laws of physics surrounding fast moving vehicles and free ranging wild animals do not discriminate. A legendary horse, known as Van Gogh, from the Sand Wash Basin Herd Management Area in southwest Colorado, was hit and killed by a car on Highway 318 just outside Craig, Colorado in October of 2020. The powerful stallion was often spotted grazing on the lush grass on the side of the highway, and concern for his safety was brought up by horse advocates as recently as two weeks before his

death. For years, a wild horse advocate group, known as “Wild Horse Warriors for Sand Wash Basin” (WHW), had been petitioning the Colorado Department of Transportation (CDOT) to install a fence separating the Sand Wash Basin's southern border from Highway 318 as the 8-mile stretch of wild horse territory comes in direct contact with the roadway. A basic fence would prevent the horses and other animals from roaming onto the hazardous highway. WHW has currently raised the funds needed to build the fence, but CDOT has yet to take action. The lack of response and Van Gogh's recent death have sparked a renewed effort to fight for the fence (and against open range laws in general) in an effort to protect both the horses and drivers (Carney, 2020).

While state officials continue to receive complaints surrounding the perceived low grazing fees and open range laws, they also draw fire from another sector: environmentalists, who believe cattle ranchers have done serious damage over time to sensitive ecosystems. Although ranchers point to evidence that aspects of grazing can actually be beneficial to the environment (discussed later) some environmentalists believe that cattle grazing shouldn't be allowed on state or federal land in in states such as Arizona at all. “Southwestern desert ecosystems did not evolve with large, slow-moving herbivorous grazers like livestock,” said Joe Trudeau, Southwest Advocate at the Center for Biological Diversity (CBD). Trudeau said indigenous wildlife, like deer and pronghorn, move more quickly across the landscape and don't denude it in the way cows do. According to Trudeau and surveys conducted by CBD, livestock grazing on public land in Arizona harms threatened or endangered species that are dependent on a healthy riparian habitat. And it also lowers the water table, impacts stream water, displaces native plants while introducing invasive grasses, and increases the risk of fire (Krannich et al., 2011).

As evidenced by increasing objections and criticisms from animal rights advocates and environmentalists aimed at grazing policies and open range laws, a connection to the traditional lifestyles of the Old West is fading. At the same time, it remains deeply engrained in many western locales. Consequently, long-time rural residents in the West often uphold deeply anthropocentric, materialist/utilitarian values and oppose land management practices that emphasize conservation or preservation rather than economic prospects associated with resource use and development (Lacey, 2010). While public lands in the American West provide a setting for a variety of outdoor recreational activities such as hunting, fishing and off-highway vehicle use that are generally pursued by those who identify with traditional rural communities, the in-migrants and urban seasonal visitors who are increasingly flocking to these areas continue to seek a broad array of *additional* outdoor opportunities, including: hiking, mountain biking, cross-country skiing, kayaking, river rafting, rock-climbing, photography, and, of course, the viewing of wildlife, including the wild mustang. It is commonly accepted that newly arrived year-round as well as seasonal residents bring with them values, expectations, and priorities that focus on the preservation of natural landscapes, protection of ecosystems, and increased concerns for the well-being of wildlife (Krannich et al., 2011; Lybecker, 2020).

Today, Western land management agencies battle not only with difficulties surrounding diminishing resources and environmental degradation, but the continual shift toward a mutualistic relationship (and loss of a domineering one) towards wildlife (see Chapter One). Such perspectives, shared by members identifying with the New West, stand in sharp contrast with the more anthropocentric/ utilitarian inclinations associated with traditional rural life. Indeed, much of the current literature dealing with the occurrence of culture clash today continues to focus

heavily on tensions and conflicts associated with disparate values and attitudes surrounding conservation of wildlife and land use issues, with lines of separation most commonly allied to differences between “newcomers” (seasonal visitors and tourists) and established rural residents (Smith & Krannich, 2000; Krannich et al., 2011; Teel et al., 2005; Theodori et al., 1998; Ploch, 1978). All the while, absent from either of these debates are the concerns purported by indigenous voices.

In most of these accounts, new in-migrants, as well as animal rights NGOs throughout the U.S., are generating new social tensions and conflicts as their urban-oriented, liberal environmental values clash with the longer-term residents’ greater conservatism and orientation toward use of resources (Smith & Krannich, 2000). A case in point is the belief, held by many recreationists and proponents of wild horses in general, that there is an organized crusade underway to remove wild horses off America’s public rangelands, and that the livestock industry is both its chief proponent and beneficiary. In their view, “it’s all about the money and expanding the livestock industry’s *stranglehold* on western public lands” (Molvar, 2020).

In contrast, American non-profit advocacy organization “Protect the Harvest,” seeks to alert and educate the general public on the views indorsed by animal rights groups, which they believe pose a threat to farmers, ranchers or hunters. Their public response to attacks on their way of life and (in their view) lopsided reporting on the part of the media regarding Nevada’s Virginia Range state managed wild horses provides such an example:

The American Wild Horse Preservation Campaign is a nonprofit animal rights organization that raises well over one million dollars a year and yet does little to nothing to actually help manage horses on American range lands. What they have done with the money they have raised off the backs of these horses is to spend hundreds of thousands on lobbying, lawsuits and salaries. Via their lawsuits and activities, they have caused nothing but problems for the government organizations tasked with managing the horses, this includes the BLM and the State of Nevada’s Department of Agriculture. (Protect the Harvest, n.d.)

Attacks on both sides of the grazing issue are nothing new. While public lands in the West have provided raw materials such as timber and minerals, wildlife habitat, water, and opportunities for recreation, the largest acreage and oldest major economic use of federal land is grazing by livestock. Clashes over grazing rights as well as other dwindling renewable resources on rangelands in the U.S. have been the object of passionate rivalries among various user groups for well over two centuries. While public-lands ranching has seldom been hugely profitable for private ranchers, and the bulk of US-produced beef ultimately comes from corporate cattle operations in the Midwest, public land policy and management decisions surrounding grazing persists as a major instigator of political, economic and social unrest in the rural communities of the western United States (Smith & Krannich, 2000; Molvar, 2020).

How can the influence of one industry have such a “stranglehold” (in the words of horse advocates) on the management of western public lands? What insights can be provided by various historical narratives and interpretation of statutes regulating grazing on western rangelands?

Evolution of Rangeland Management Statutes

Nearly seven decades of tension and conflict on the rangelands of the American West culminated in the Taylor Grazing Act of 1934 (Coggins et al. 2007; Because the drought during the Depression years threatened the livestock industry with economic failure, the Act passed with ease. After Congress conceded the failure of its premise that the public domain ought to be thrown open to private development, free of charge and unrestrained by government regulation, it withdrew the remaining public domain into controlled grazing districts (Peffer, 1951). An important feature of the act was its mandate for the Secretary of the Interior to collaborate with local associations of stockmen in the supervision of the grazing districts, referred to by supporters of the law as “democracy on the range” or “home

rule on the range," (Coggins et al., 1982). This was reinforced by the creation of local advisory boards. Although the Act established a Division of Grazing (renamed the Grazing Service in 1939) to administer the law, the agency, for a number of reasons, was ineffective. Because of its reliance on the local advisory boards, it was often cited as an example of an agency captured by the interests it was supposed to be controlling. In 1946, the agency merged with the General Land Office to create the BLM (Talbot & Cronemiller, 1961; Freemuth, 2016).

A period of increased turmoil and revolution in federal land and resource management began in the mid-1960s, coinciding with the public's reaction to degradation of ecosystems and the sparks of the broader environmental movement in the U.S. that had already been ignited. Initial endeavors to gain the public's attention were prompted by a significant environmental publication authored by one of the founders of the environmental movement, ecologist Rachel Carson, who, in 1962, addressed the "silent spring" awaiting the nation if immediate legal action confronting the destruction of shared ecological habitat was not confronted (Carson, 1962). Humans, Carson argued, should not seek to dominate nature in the name of progress. Such human innovation could easily and irrevocably disrupt natural ecosystems. The ecological interconnections between nature and human society that Carson described went far beyond the narrower, "natural resource" interests of the traditional conservation movement. A generation of Americans broadened their perspectives and were inspired into political activism by Carson's powerful work. Furthermore, her plea called into question a major item of faith in the 20th century: the authority of scientific experts – and consequently the trust in "top down" regulation of conservation efforts. Carson illustrated how scientific professionals trusted their own inventions too greatly and how they themselves were implicated in a vast complex of private and public interests designed to produce profits for

chemical manufacturers as well as the growing agribusiness sector. The years following the controversy over *Silent Spring* saw the establishment of the U.S. Environmental Protection Agency and the passage of numerous laws protecting the environment and human health, including, following Carson's powerful critique, a ban on domestic use of DDT in 1972 due to its widespread overuse and harmful impact on the environment (Stoll, 2020).

Of course, the livestock industry was also hugely impacted during this time as new legislation replaced hundreds of outdated U.S. Code regulations that had previously embodied rangeland management programs. Chief among these new regulations, were the National Environmental Policy Act (NEPA) of 1969 and the Endangered Species Act (ESA) of 1973. These laws altered the expectation as to how public lands and wildlife were to be managed, leading, among other things, to changes in the terms and conditions that applied to grazing leases and permits on public lands. In addition, the passage of the Federal Land Policy and Management Act of 1976 (FLPMA), which was later amended and supplemented by the Public Rangelands Improvement Act of 1978 (PRIA), officially sanctioned the BLM with a statutory mission. This act superseded the Taylor Grazing Act of 1934 and made it national policy that the BLM lands would be retained in federal ownership, thus making this an example of Retention policy. Likewise, the National Forest Management Act of 1976 (NFMA) mandated new policy for the USFS. While FLPMA did not revoke key Taylor Act Grazing right provisions, it did overlay a new-found management scheme with diversified goals and foresight on the importance of the disparate values of various interest groups. Perhaps the most important alteration by FLPMA was the mandate calling for full public participation in comprehensive planning programs in order to establish management objectives (Borman & Johnson,

1990; Coggins et al., 1983). The detailed goals of FLPMA highlighted that public lands would be managed in an effort to:

Protect the quality scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources, and archeological values; and that where appropriate, such goals were to preserve and protect certain public lands in their natural condition in order to provide food and habitat for fish, wildlife and domestic animals. (FLPMA, 1976)

At the same time, FLPMA was to provide for outdoor recreation and human occupancy use, including the recognition of the Nation's need for domestic sources of materials, food, timber, and fiber from the public lands. While FLPMA would continue to protect grazing permittees (in a restricted manner) by preserving grazing preferences, attending concerns for grazing hardships, funding range improvements, and providing for individual and institutional advice from ranchers, it clearly confirmed that livestock grazing had been downgraded from the fundamental rangeland use under the Taylor Act to one of multiple uses and that livestock producers were no longer entitled to priority in forage allocation. Recognizing that immense sections of public rangelands were producing less than their potential for livestock, wildlife habitat, recreation, forage, and water and soil conservation benefits and perhaps grasping the reality that FLPMA would be unsuccessful in reversing these trends, Congress took action again just two years later. In the Public Lands Improvement Act (PLIA) it declared that "the goal of (public rangeland) management shall be to improve the range conditions so that they become as productive as feasible (for all rangeland values)" (Donahue, 2005; PRIA, 1978; Gillis, 1991; Government Accountability Office, 1993). In other words, improvement of range condition was declared to be the primary goal of rangeland management and not just a goal. While other provisions of the law included the continued monitoring of range condition trends as well as the security of tenure for ranchers for generally ten years, it did not secure permitted numbers.

Even before the environmental movement had become entrenched in policy, the BLM had already reduced the number of animals permitted on the range by a third. Furthermore, in the 1950s, and in the 1960s, grazing allotments were fenced for the first time. Such heightened restrictions on grazing, new environmental laws that solidified retention policy, and public interest in the BLM lands for recreation, wildlife and wilderness areas, culminated in the "Sagebrush Rebellion" (so named because of the sagebrush habitat where these public grazing lands exist). This era, beginning in the late 1970s, reflected a manifestation of extremely tense relations between consumptive users of public rangeland (cattlemen, loggers, miners) and their perceived opponent: federal land managers. The goal for those consumptive users of the land was to acquire more local control over the land that surrounded them, and therefore gain more control over their own destiny. The movement had numerous layers, from local politicians and entire boards of county commissioners to state legislators and U.S. congressmen. President Ronald Regan called himself a sagebrush rebel while campaigning in the west. A few involved in the movement wanted to transfer federal lands to the state, while others approved of the land remaining under the federal umbrella, as long as users had more input on how the feds were to manage the land. In most cases, this would mean fewer regulations (J. Thompson, 2016; Wolters & Steel, 2020).

Opposition to federal control by livestock operators increased in the wake of the 1974 lawsuit by the Natural Resources Defense Council against the secretary of the interior (Rogers Morton). The council successfully argued in court that public lands were being overgrazed and that the effects of this use must be determined by environmental impact studies, thus forcing the BLM to comply with the 1969 National Environmental Policy Act (NEPA) by preparing environmental impact statements on the effects of current and future grazing plans for rangelands. NEPA, in fact, was to

come into play whenever agencies contemplated any major federal action that significantly affected the quality of the human environment. Consequently, every federal agency would be required to put its reasoning and conclusions regarding such actions into writing as well as prepare these documents for public scrutiny and judicial review. The subsequent assessment of grazing districts in the early 1970s confirmed that a majority of public lands were in poor condition when compared to their historic potential; that a major source for this condition was overgrazing; and that enhancement of range condition was contingent largely on reducing the number of grazing animals and restricting the accessible areas for grazing. In short, some might argue that environmental impact statements required by NEPA would imply the level of grazing by small family farms was problematic and, in their belief could threaten their livelihoods. Using techniques that cattlemen found questionable, the BLM assessed the carrying capacity of the rangeland in the mid-1970s and followed up with a declaration for further reductions in herd sizes. In response, several organizations came to the aid of the ranchers, including the University of Nevada's College of Agriculture in Reno where researchers prepared a thorough evaluation of the economics of cattle ranching in Humboldt County and contended that reductions in AUMs would have a severe adverse effect on the livestock industry (Coggins et al., 2007; Library of Congress, n.d.).

On the heels of NEPA, the 1971 Wild and Free Roaming Horses and Burros Act (WFRHBA) directed the BLM to shift its attention from managing grazing for the long-term benefit of ranching to protection of specific rangeland resources, including horses and burros. This revolution in rangeland management was yet another blow to livestock operators who grazed cattle and sheep on public lands. Federal protection of wild horses and burros not only resulted in increased competition with livestock for forage and water, but indirectly required ranchers to subsidize horse

and burro access to water with extra fuel to run well pumps and repair horse and burro caused damage, thus increasing the operating costs of an already marginally profitable industry. Although regional livestock boards still exert a good deal of control over public rangelands, ranchers perceived WFRHBA as an indication that they were losing a greater sense of control over public rangelands (Freemuth, J. 2016; J. WFRHBA, 1971).

Further defeat for livestock operators in the jurisdiction and use of public rangelands was legislated by the 1973 Endangered Species Act (ESA). Passed in 1973 to provide a means to conserve imperiled species and the ecosystems upon which they depend, the ESA prohibits any act which "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering" (Endangered Species Act, 1973). Under the ESA, actions on federal land as well as those requiring federal authorization or that receive federal funding, require consultation between the Fish and Wildlife Service and the federal agency undertaking the action. Marine fisheries and anadromous species are overseen by the National Oceanic and Atmospheric Administration.) Consultation with these agencies is intended to ensure:

That any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [designated critical] habitat. (Endangered Species Act, 1973)

Similar to the 1964 Wilderness Act, which established a national network of what would become more than 800 federally designated wilderness areas in order to preserve and protect certain lands "in their natural condition" and thus "secure for present and future generations the benefits of wilderness," the ESA is either supported (e.g., by most environmentalists) or opposed (by many in the ranching,

mining or forestry industry). Under the Wilderness Act, "Wilderness" in contrast with those areas "where man and his works dominate the landscape" is recognized by:

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. (The Wilderness Act, 1964)

Although newly created wilderness areas allowed limited grazing in allotments that were grandfathered in, "retaining the primeval character of wilderness" further fanned the flame of hostility on the part of livestock producers toward federal control of grazing privileges. While rangeland reform of the 1930s imposed new regulations on public land grazers that targeted soil conservation, its purpose served the long-term interest of ranchers. In contrast, environmental laws, from the Wilderness Act to the Endangered Species Act to, especially, FLPMA, shifted the BLM's mandate from one of maximizing extraction from public lands, to sustainably conserving and even preserving some of those same lands from significant use beyond passive form of recreation. These acts displaced ranching as chief users and regulators of public rangelands and helped trigger the rebellion against "federal colonialism." To opponents, FLPMA locked in the "absentee landlord" relationship Washington had with much of the West. The Sagebrush movement calmed a bit after the election of Ronald Reagan in 1980, as his Secretary James Watt pushed for the restoration of natural resource use and the weakening of environmental regulations. Still, there has been an off-again on-again movement to transfer much of the federal lands, apart from the national parks and wilderness, to states to manage. As previously mentioned, this is politically unacceptable to most due to the huge costs of managing lands (particularly in the case of wildfires), as well as the uncertainties over how the land could be used (J. Thompson, 2016).

Continued resistance by ranchers to federal land management reform could plausibly be traced to two related attitudes, common in rural western regions. Because ranchers previously had exclusive use of the public lands from early settlement in the late 1800s until federal regulation was initiated by the Taylor Grazing Act in 1934, they began to regard rangelands as their private domain and consequently may resist BLM efforts to broaden management goals to serve other public purposes. Further, an antifederal attitude, sometimes labeled "frontier individualism," is commonly held in rangeland states. These attitudes developed into a political movement in the 1970s and 1980s generally referred to as the aforementioned "Sagebrush Rebellion" (Coggins et al., 1982).

The cowboy myth – or the symbolic pioneer spirit and rugged individualism associated with ranching – provides insight into the philosophy of land management and property rights that reigned during the era of the Old West and still prevails today (Protect the Harvest, n.d.). With this narrative as its base, the view of today's Old West focuses on the romanticized idea of hard-working, largely ethnically European, men and women whose hardy individualism carries them through boom-and-bust cycles of the land. In their belief, they are the members of society who truly understand the western landscape and have the ability to apply this knowledge to survive economically; they value the landscape for what it provides, but also concede that there are limits to the number of resources that can be taken and the number of individuals who can survive on the western lands. The economic success of the western ranching community has traditionally relied on this independent nature. An appreciation of this character trait – as well as pre-existing indigenous claims erased by this narrative – can aide in efforts to understand the numerous conflicts over rangeland management and can lead to further understanding of anti-grazer's perception of the cowboy myth (Protect the Harvest, n.d.).

Captured By a Myth

You don't see it on your way to work, through the fields or on the mountain, but there is a war being waged against *our way of life*. They'll tell you all the reasons why our way of life is bad for Montana, bad for their country, bad for our future, how it's immoral that you live here, walk here, grow their food here.... They'll tell you that the land's only hope is for them to be its steward. The ugly truth is they want the land, and if they get it, *it will never look like our land again*. That is progress in today's terms.... I am the opposite of progress. I am the wall that it bashes against – and I will not be the one that breaks. (Linson et al., 2018-present)

The paradigm of the Old West has given birth to numerous interpretations of cultural identities and laws governing the use of natural resources. In his book, *Crossing the Next Meridian: Land, Water, and the Future of the West* (1992), Charles Wilkinson, Professor of Law at the University of Colorado, referred to these institutions and policies as the "lords of yesterday," suggesting that nineteenth-century federal programs may have been suitable for that era, but are radical and extreme by today's standards. Wilkinson contended that the unrestrictive policies governing western natural resources under the "lords of yesterday" did not anticipate a need for environmental protection or resource preservation, as the landscape gave the impression that resources were abundant and limitless. Consequently, such Lack of foresight and long-range resource management has squandered abundantly diverse ecosystems (Wilkinson, 1992).

In "Western Grazing: The Capture of Grass, Ground, and Government" (2005) law professor Debra L. Donahue applies a "capture metaphor" to the legal, political, cultural and economic aspects of grazing on federal rangelands in the American West. She argues that western ranchers have created a "cowboy myth" which lacks any "legal, historical, or scientific legitimacy," to "capture" the law, politics, science, and public perception supporting the so-called "disastrous" four hundred year old practice of grazing western rangelands Donahue, 2005; Merriam-Webster, Incorporated, 1986, p. 1497). In Donahue's view (and that of anti-grazing activists

in general) public-land ranchers enjoy preferential treatment by Congress, by state legislatures, governors, boards, and local officials, as well as range scientists and university administrators, because all are subscribers to the cowboy mythology in an attempt to preserve the "Old West" as they *imagine* it to be. Chief among these cowboy myths, according to Donahue, is the belief that "ranchers" (land owners who graze cattle or sheep) and "cowboys" (hired hands that work for ranchers) are synonymous; cowboys are "romantic figures;" cowboys (hence, according to the myth, ranchers) are independent, self-reliant, honest, hard-working and respectful; ranchers are "good stewards of the land and all its creatures;" and grazing improves the land (Donahue, 2005).

A surprising stakeholder group, in Donahue's belief, that has attached themselves to the "sustainable ranching" bandwagon is environmentalists. In her belief, this group and even the court system, has rendered judgments she claims are inexplicable unless one accepts that they, too, are vulnerable to the cowboy myth and ranchers' political clout. Donahue describes how the myths are perpetuated for profit or to support other interests by various groups and outlets, including magazines, filmmakers, 'poets,' artists, manufacturers of consumer goods, chambers of commerce, tourism bureaus and real estate agents (Donahue, 2005; Cash, 2000; Baeloch & Fite, 2005). In Donahue's view, among the most influential – and thus potentially damaging – proponents of cowboy mythology are range and wildlife scientists. She claims some of these scientists are associated with universities, serve as government consultants, contribute to environmental assessments and participate in collaborative public-land planning and management efforts. "In these contexts," according to Donahue, "their casual, misleading, and/or unsupported statements can significantly retard the development of sound public-land grazing policy and a better understanding of range ecology" (Donahue, 2005).

The furor over Donahue's denigration of ranchers, their way of life and their role on the landscape in her most recent publication, as well as accusations presented in her earlier work, *The Western Range Revisited publication (date)*, created such intensity in Wyoming that angry citizens called for her dismissal and some state legislators sought to withhold funding from the University of Wyoming Law Department. Defended by her university for her right to free speech, Donahue withstood that onslaught, but the controversy she sparked continues to draw crowds whenever she takes the podium (Bagne, 2016).

In "Clear the Air" (2006) property rights and natural resource lawyer Marc Stimpert responds to Donahue's accusations. In an era of environmental rhetoric, he reminds us that it is popular for legal scholars to lament that federal rangelands have historically been managed primarily for the benefit of livestock ranchers, with environmental protection and alternative uses relegated to a secondary role at best (Feller, 1994; Campana, 2002). He goes on to show that history does not support this claim.

Federal homestead and open range policies were a disaster for ranchers and rangeland alike. Homestead laws did not support the creation of legally recognized sustainable western ranching units. As a result, ranchers with private land were forced to use open rangelands, bringing them into direct conflict with other homesteaders and nomadic ranchers. The resulting range wars and rangeland degradation were a direct consequence of these policies. These problems could have been avoided, and ranchers would have been better served, had Congress recognized the custom of ranch homesteads by allowing them to purchase or claim a sufficiently large parcel of intermixed or adjacent public rangeland to create a sustainable ranching unit. (Stimpert, 2006, p.496)

Through his analysis of the historical context, Stimpert further demonstrates that the "capture" of private property through beneficial use is an integral and legitimate part of the American legal system – as evidenced in the Homestead Act of 1862 and the General Mining Law of 1872. Whether it be called capture, beneficial use, or capture through beneficial use, the principle remains the same: the person

who applies labor to an unclaimed natural resource in a manner which results in a beneficial use, should be entitled to ownership of that resource. This is a common principle of American property law (Coggins et al., 2007). While the rule of capture was fully applied to homesteaders, farmers, miners and water users, it was only *partially* applied to ranchers, allowing ranchers to obtain the *conditional* right to graze public lands. Although ranchers were not allowed to fully obtain fee title, they did obtain a powerful set of constitutionally protected entitlements which, through enforcement of the 1934 Taylor Grazing Act and 1976 Federal Land Policy Management Act, cannot be arbitrarily eliminated. As Stimpert puts it, "The idea that ranchers have little to no legal right to graze is a falsehood created by those who wish to eliminate grazing use" (Stimpert, 2006, p.518).

According to Stimpert, the Western cowboy is often portrayed as the quintessential American hero, a strong, hard-working, ethical family man who cares for the land, contributes to his community, and honors the culture, traditions, and values passed down to him through generations of ranching families. The anti-grazing movement, however, has sought to destroy this image. The perception that ranchers and cowboys live lives of freedom and adventure in the open air on the open range, according to Donahue, is "mere fiction." Ranchers are (sometimes absentee) landowners and businesspersons, while cowboys are hired hands, among the lowest paid workers in the West. Donahue offers an alternative definition of "cowboy" (presented by Webster's) as an "outlaw or gangster in the early days of the western U.S." Contrasting with the belief that cowboys were generally liked or admired, Donahue sites evidence describing how most cowboys were illiterate; they were often disorderly, prone to violence and drinking, and considered uncivilized. While she agrees that ranch managers work hard, she cites the fact that many in other occupations and professions also have a strong work ethic. Furthermore: While

ranchers may be “rugged individualists” and philosophically independent public-land ranching has long been heavily dependent on government subsidies and is still referred to as a ‘pocket of socialism’ in our capitalist economy (Donahue, 2005).

Stimpert, in rebuttal, show how the cowboy legend is grounded in fact, and survives to this day.

The typical federal land ranch family lives on a multi-generational homestead. They ranch to sustain their family values, culture, heritage, and traditions. They persevere in the face of increasing costs and regulation, even if that means accepting a low income or subsidizing their ranch with other endeavors. They maintain a connection to the land, riding the same trails that their fathers, grandfathers, and great grandfathers rode before them. They are community leaders, providing jobs for their town and food for their nation. They stubbornly refuse to let their ranches be subdivided into sprawling developments and industrial parks. In an increasingly urban, culturally homogenous society, they represent one of the few vestiges of traditional American values, culture, and heritage. They represent the spirit of America, and for that reason alone, they should be cherished and preserved. (Stimpert, 2006, p.529.)

According to rangeland and human dimensions scientists Bradly Genter and John Tanaka, two of the most important factors established in their survey for owning a ranch are the beliefs that “owning land and a ranch is consistent with my family’s tradition, culture, and values,” and that “a ranch is a good place to raise a family” (Genter & Tanaka, 2002). Thus, most ranch families view ranch ownership and the way of life that accompanies ranching as a way to maintain their family’s values, heritage, and culture. Ranching families are often willing to forgo a profit and supplement their income to maintain their way of life. If their federal grazing privileges were eliminated, many ranchers would try to stay in business, however, doing so would necessitate the fencing of private land, affecting the free movement of wildlife and extinguishing the wide-open landscapes for which the West is famous. To make up for the loss of federal land forage, many ranchers would also have to increase their farming and haying activities on private lands (thus increasing resource inputs, including water, fuel, fertilizer, and chemicals). Consequently, many

federal land ranchers would simply go out of business (Van Tassell et al., 1997). When this happens, private lands are often sold for uses such as mining, oil and gas development, and industrial and residential development; uses have significantly greater environmental and aesthetic impacts than the grazing of native rangelands. Because ranchers water developments benefit wildlife, and these would no longer be maintained, species diversity that can occur with proper grazing management would disappear (Protect the Harvest, n.d.; Porter [rancher], personal interview, 2018). Beyond legal claims of property and grazing rights, and the various narratives surrounding the cowboy myth, the anti-grazing agenda is pushed further by many animal activists, animal welfarists, vegan activists and environmentalists driven by animal care practices, environmental stewardship, the existence of re-introduced predators (gray wolves), nutritional beef products and climate change concerns. Consequently, this narrative leads to the belief that livestock grazing, in *all* aspects, is not environmentally beneficial (Donahue, 2005).

This ecological interpretation of livestock grazing (cattle and sheep) and concerns for proper land stewardship can be traced back to the belief that before livestock were introduced, the arid lands found west of the 100th meridian were replete with abundant growth and fertile, towering grasses – in some cases as high as seven feet (Campana, 2002). In truth, the scrubby brush, hardy forbs, and short grasses which embody much of the western landscape are endemic to the area; existing long before livestock appeared (Holechek et al., 2001). Furthermore, these plants evolved under – and are adapted to – the harsh and variable conditions found in the West: sparse and intermittent precipitation, fire, and grazing by native herbivores. While it has been known for over a century that sustained heavy to severe grazing intensities by grazing herbivores (both livestock and wildlife such as elk or bison) are harmful to soil, vegetation, and other wildlife by changing species

composition, excessively compacting the soil, and causing increased soil erosion (Leopold, 1946; Holechek et al., 2001), the reverse, in some rangeland ecosystems, however, is also true: plant health can become stagnant and decline in the absence of stimulating livestock grazing. Moderate treading by ungulates can have advantageous effects by incorporating standing dead material into the soil surface, increasing mineral cycling and favoring the emergence and survival of perennial grass seedlings. The physical act of grazing further aids in nutrient cycling by increasing the rate of nutrient flow and availability in rangeland ecosystems by biting, chewing, rumination, digestion, urination, and defecation. These processes cause a large proportion of essential nutrients otherwise tied up in plant material to become more rapidly available in mineral form to support plant growth (Holechek et al., 2004). Additionally, many plant and animal species and communities need disturbance, including grazing, to thrive. Grazing can therefore be used to improve wildlife habitat and benefit certain wildlife species (Anderson & Scherzinger, 1975; Vavra, 2005). While range scientists and ranchers have long acknowledged that damage to soil and vegetation occurred in the late 1800s and early 1900s because of severe grazing over much of the western United States, it is also well established that steady improvement has occurred on both publicly and privately owned rangelands over the past 60 years due to better consideration of controlled grazing versus grazing exclusion (Springmann et al., 2018).

Concerns over climate warming revolve around the belief that the agriculture sector is one of the biggest emitters of CO₂. A 2018 study published in *Nature* concluded that Americans need to eat 90% less beef and 60% less milk to keep global warming under 2 degrees Celsius (Kateman, 2020). At the same time, as awareness spreads around the benefits of a plant-based diet on the environment, a growing regenerative agriculture (RA) movement is endorsing the view that livestock

are actually integral to shaping farming practices that will save the planet RA uses holistic farming and grazing techniques to improve soil health in order to rebuild and restore degraded soil, allowing it to sequester carbon and maintain biodiversity (Kateman, 2020). For many, livestock are seen as integral to RA—helping with carbon sequestration, soil biodiversity, nutrient distribution and weed control. Much of the land on Earth that is grassland is not suitable for growing fruits or vegetables. Crucially, many believe animals should be allowed to graze in ways that mimic nature (see Chapter Five). Most of its proponents aren't opposed to slaughter, so long as the animal has a good life (Holechek et al., 2004).

Partnerships and Collaboration

An excellent example of collaborative efforts between the ranching community and an environmental NGO (the unlikely group that has succumbed, in Donahue's words, to the "Sustainable Ranching: bandwagon") is the renowned conservation organization World Wildlife Fund (World Wildlife Federation, n.d.). Recognizing that their viability is key to keeping grasslands intact, WWF has been partnering with ranchers, since 2001, through the Sustainable Ranching Initiative (SRI) in the Northern Great Plains (NGP)—a region spanning over 180 million acres, five states and two Canadian provinces. This area is one of only four remaining intact temperate grasslands in the world. Over 94 million acres in the NGP remain as privately managed intact grassland, providing havens for species like the greater sage-grouse, Sprague's pipits, Chestnut-collared longspurs and many other prairie birds, which are in the steepest decline of any bird guild in North America. NGP. According to WWF:

Ranchers are stewards of some of the best remaining intact grasslands in the NGP but they face challenges from an increasingly complex environment. Agricultural policies and new technologies incentivize conversion to cropland, while ranching families face economic pressures and increasingly dynamic weather... Keeping these grasslands intact not only helps conserve

biodiversity, but ensures cleaner streams, less fertilizer runoff, more pollinators for plants, and more carbon stored in the soil...When ranchers manage land for long-term ecosystem health, resilient communities result, and we all benefit. (World Wildlife Federation, n.d.)

In the view of WWF, Cattle grazing, when managed appropriately, results in conservation benefits and increased ecosystem services. Grazing maintains the health of grasslands, improves soil quality, and preserves open space and wildlife habitat. Additionally, carbon is sequestered in the grasses and soils of grazing lands. Beef production also provides social benefits, sustaining livelihoods and community vibrancy in rural areas. To develop a program that simultaneously addressed conservation and rancher concerns, the SRI team held listening sessions with ranchers throughout the NGP in 2015. One issue that consistently emerged was the concern about the future of ranching as few ranchers had developed ranch transition plans to pass on their operation to the next generation. To address this concern, WWF partnered with the Nebraska Grazing Lands Coalition to launch a new approach to transition planning in Nebraska in 2019. Going forward, the SRI will utilize the strong relationships built with ranchers throughout the NGP to protect and restore grasslands as well as improve management. Rancher engagement will continue to be an important component to achieving these goals (World Wildlife Federation, n.d.).

Another model of collaborative rangeland management involving the ranching community is the Malpai Borderlands Group. This project began in 1993 in an effort to address threats to ranching by educating, looking for common ground, and collaborating with local, state and federal agencies, universities, and environmental organizations (Schumann, 2016). The planning region, which extends along the Mexican Border from near Douglas, Arizona to Antelope Wells, New Mexico and North to New Mexico Highway 9, covers approximately one-million acres and includes roughly 57% private land, 20% state trust lands, 11% National Forest, and 7% BLM-administered land. Current issues addressed by the Malpai Borderlands Group

include: shrinking open spaces in the Southwest, growing opposition to ranching, lack of understanding about ranching values and way of life, increasing development of subdivisions, the need to improve grazing lands, the need for coordinated fire control management, and droughts resilience (Schumann, 2016).

There are significant legal, scientific, cultural, and economic reasons to support and protect federal land grazing rights and the rural ranching way of life. At the same time, with the transition to urban life, a paradigm shift from “Old West” to “New West” values and a continual decrease in the number of ranching operations since the mid-20th century, ranchers’ frustration with the perceived legal and social attacks on their way of life continue. Detractors of environmental laws such as the Wilderness Act and Endangered Species Act see them as unnecessary burdens on economic development that result in the sacrifice of good-paying jobs for limited benefit. The Acts’ fans view these policies as holding profound moral and legal significance as the last safeguards against species extinction and ecological decline. For animal welfare and animal rights advocates who have become frustrated with the perceived failures of WFRHBA, overarching goals to secure increased privileges for America’s mustangs have evolved into several courses of action: 1) utilization of the Endangered Species Act: the search for an alternate means of federal legal wild horse protection (as evidenced by the Friends of Animals’ strong pursuit of endangered status for the horses in the Pryor Mountain Wild Horse Range in Wyoming and Montana) (Fitch, 2014), 2) litigation that focusses on agencies’ failure to adhere to NEPA (as evidenced by the legal action taken by members of Wild Horse Education against the non-compliance with NEPA in the use of Radio Collars on Mustangs in the Utah Confusion HMA) (Wild Horse Education, 2020), and 3) petitioning for state protection of horses in those instances where mustangs are

residing in areas where WFRHBA cannot protect them (as evidenced in Arizona's Salt River Horses) (Salt River Wild Horse Management Group, 2022).

The Horse advocates prime adversary in this scenario has become the ranching community, who, in their minds, is standing in the way of their continued efforts to increase available areas for the horses. Ranchers, after all, represent the very group damaged by the laws.

Mustang Protection in the New West

Perhaps the main concern FoA (Friends of Animals) and activists in general have with wild horse management under BLM jurisdiction is the opinion that the very statute that was passed to protect the mustangs is not ensuring that Herd Management Areas are maintained for the benefit of the animals (physiologically and emotionally), nor is it doing enough to secure their genetic diversity. According to Mike Harris, director of the Wildlife Law Program for Friends of Animals (FoA):

The Wild Horse and Burro Act really has become nothing more than a procedural hurdle for BLM to have to go through to do roundups and other types of population management. It's been decades since that has passed, and it really hasn't panned out to be that protective. (Ash, 2018)

At the same time, critics such as Leo McDonnell Jr., director emeritus of the U.S. Cattlemen's Association, say if the tens of thousands of wild horses that roam public lands in the West are given endangered species protection, it could establish a dangerous precedent for limitations on cattle grazing and constraints on development and outdoor recreation. Furthermore, "there will be restricted use on habitats for endangered species, which will only increase over time.... That's the history of those things. It's not a good deal for the public" (Ash, 2018). McDonnell also argues that the Pryor Mountain horse herd in Montana doesn't have any "native" horses in it. The familiar "native verses non-native" debate culminates in further discussion revolving around whether a species that is reintroduced to an environment thousands of years after local extinction can be classified, legally, as

endangered, as well as the potential ramifications of doing so. In McDonnell's words: "there are no pure mustangs left; lots of ranch horses have been turned out there and have intermingled with them. At the end of the day, you've just preserved a bunch of barnyard horses" (Ash, 2018).

The record shows, however, that horses are indeed native and thrived in North America before vanishing between 10,000 and 8,000 years ago. Many well-known Ice Age species also died out on the continent during this same period including the camelops, the ancestor of all camels. Similar to the horse, camels were re-introduced into North America in the 1800s as part of the United States' westward expansion. Camels were recognized as a viable means to surmount the extended, rugged trails westward and supply passage through dry and sometimes barren terrain. Some have argued that if camels had established a breeding population in the American Southwest, the lawsuit to establish wild horses as an endangered species might be about re-establishing wild *camels* in North America today. Indeed, proponents of "Rewilding" (see Chapter Five) would include as many Ice Age herbivores and carnivores as technically, genetically, geographically and ecologically feasible. Such comprehensive, often large-scale, conservation efforts focus on restoring sustainable biodiversity and ecosystem health by protecting core wild/wilderness areas, providing connectivity between such areas, and protecting or reintroducing apex predators and highly interactive species (functional species) (Ash, 2018).

Should protection of wild horses then, be viewed as a rewilding effort? Undoubtedly, this would only be appropriate in a scenario where land areas and corridors were large enough to encompass the ecological needs for the apex predators (primarily cougars, aka mountain lions or *Puma concolor*) necessary to "naturally" control equid populations. Open landscapes, which are preferred by

horses, are generally thought to be advantageous to coursing predators that may pursue prey for long distances, and a limitation for ambush predators such as cougars that require stalking and forest cover (NRC, 2013). While documentation of predation on horses by cougars is uncommon (Berger, 1986; Murphy & Ruth, 2009; NRC, 2013), cougar predation has been implicated in limiting the growth of two unique horse populations (Greger & Romney, 1999; Turner & Morrison, 2001; J.W. Turner, 2015). In addition, cougars are one of many species in which there is increasing evidence of high variation among diets of individuals. Furthermore, they are able to respond to changes in prey abundance by prey switching (Sweitzer et al., 1997; Novaro et al., 2000), and are able to exploit novel prey (Novaro et al., 2000). Although optimizing predation by cougars on horses through ceasing cougar hunting has been suggested as a panacea for managing horses (Philipps, 2018; K. Phillips, 2018), there continues to remain little data to support this (Andreasen et al., 2021). A key argument against this “natural” solution is the potential to disproportionately affect smaller, more vulnerable prey populations (such as bighorn sheep) when generalist predators such as cougars are numerically linked to more abundant primary prey (in this case, free roaming horses). “Predator mediated apparent competition,” the term for this phenomenon, has been increasingly implicated in the declines of endangered prey populations (H. Johnson et al., 2013). Accordingly, predation on horses has previously been associated with low densities of mule deer (*Odocoileus hemionus*), seasonal migration of mule deer (Turner et al., 1992; Turner & Morrison, 2001), or areas where horses were relatively more abundant than deer. Population control of either wild horses or cougars (as well as other predator reintroductions, such as gray wolves) remains contested by the ranching industry, further emphasizing the need for accurate understanding of their predator-prey dynamics for efficient management (Berger, 1986). Without these natural regulators

in the ecosystem, humans must inevitably step into the predator role or administer some means of population control in order to avoid the inescapable: overpopulation, depletion of rangeland resources and slow and painful death for the mustangs.

Although WFRHBA states that “wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death,” it does also call for *reasonable* management including, among other things, whether they are overpopulated and:

Whether appropriate management levels should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural controls on population levels)...Such action shall be taken...until all excess animals have been removed so as to restore a thriving natural ecological balance to the range, and protect the range from the deterioration associated with overpopulation. (WFRHBA, 1971)

Because WFRHBA provides a procedure for wild horse destruction, FoA’s continued complaint is that the act doesn’t do enough to safeguard the horses from such extermination. Furthermore, it does not provide adequate space for the horses to roam (and therefore provide for adequate genetic diversity). In their view, the only available statutory tool that enhances protection is the Endangered Species Act.

Furthermore, according to Harris:

There’s nothing at all in the Endangered Species Act that has to do with native versus non-native. Five or six years ago when we really started doing this work, that was always thrown out there – ‘They’re non-native!’ – but anyone who has looked at the paleontological record knows that’s just hogwash. (WFRHBA, 1971)

“Nativeness” then, is not the crucial indicator for specific groups that merit protection under the ESA. Through the definition of “endangered species,” the ESA essentially declares that any species (or subspecies or vertebrate distinct population segment) can qualify for protection other than “a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man” (Ash, 2018).

As noted by University of California law professor Holly Doremus, it is possible that the authors of the ESA assumed that only native species would be disappearing, or they simply didn't consider the issue since "invasive species" were not yet seen as huge players in the field of environmental protection. Nevertheless, sheltering native species and a primary concern for biodiversity remain the key goal of conservation biologists (see Chapter Five). Due to climate warming, however, ecosystems are changing rapidly. In order to adapt, native species are migrating to new areas and hybridization is occurring at an unprecedented rate. Labels of "native" and "non-native" may no longer be appropriate categories for separation of creatures "worthy" of protection (Endangered Species Act, 1973).

Even if the ESA fails to mention nativeness or invasive species as essential or exclusionary in terms of qualifying for protection, Maggie Nutter, the U.S. Cattlemen's Association's board representative for Region VI (Montana and Idaho) believes the Endangered Species Act isn't necessarily the tool horse advocates should use to preserve the horses. In her opinion, the BLM is currently doing an adequate job at keeping the herd in check in relation to the environment. Because mustangs were a domestic animal at one time, Nutter compares them to feral hogs in North America. "If they had a snout and a curly tail, they'd be called an invasive species," she said. She sympathizes with FoA's desire to preserve the horses but feels they're not really doing the landscape or the horses any good by allowing them to "overpopulate" rangelands. She is of the mindset, as are many livestock operators, that horses are harder on rangeland than cattle.

Horses' teeth get closer to the ground when they graze and nip grass shorter than cows do, loosening it from the soil at times and shrinking root growth. The roots are so important because that's where the energy is stored, so come fall if you continuously nip that grass off, there's not a lot of energy left in those roots. You continue to do that, all you have is poor forage and weedy stuff all over your ground. That also reduces the habitat for wildlife, so it's a no-win situation if you overcrowd the range. (Doremus, 2014)

Even though Herd Management Areas such as the Little Books Cliff in Colorado have shown success with fertility control utilizing darting methods with *Porcine Zona Pallucida*, Nutter views fertility control efforts as expensive and not highly effective. Rounding up and donating the horses, humanely putting them down or sending them to slaughter are viable choices to her. "I personally don't see those as bad things...It preserves the horses because their herds are smaller but they're healthy, it preserves the rangeland, and it saves our tax dollars." Roundups and slaughter, however, are the reason FoA is turning to the ESA in the first place. Such solutions remain unacceptable to those supporting the mindset of the New West with increased concerns for animal rights and welfare (Ash, 2018).

If "nativeness" to a particular geographic region provides no assistance in terms of protection under the ESA for wild horses, another possible indicator might fall under "naturalness," in relation to humans. Limiting nature protection laws to species that are not domesticated implies that we interpret "nature" to include only the world outside the realm of human control. Because domesticated creatures are in a sense "manmade," many conservationists would claim they are not worthy of such protection (Flores 2016). Laws that protect nature may be drafted as a matter of respect for wild things living autonomously, a moral responsibility for the value of something we can't bring back if we lose it, or even a duty to a higher power to act as mindful stewards of wilderness areas. Unfortunately, a focus on naturalness, like nativeness, fails in its ability to resolve the wild horse dilemma. Because horses acquired all of their "horse-like" characters long before humans entered the picture, unlike such domesticated creatures as cats or cows, are they not still "natural"? Humans did not "create" horses. Their genetic make-up was simply altered in order to satisfy our desired purposes. The question remains: how natural must a creature

be to merit qualification under “nature protection” laws? Furthermore, is there a time limit on an acceptable gap from such domestication?

As opposed to seeking assistance under the ESA, Nutter’s solution for the unique genetic and “previously domesticated” status of the Pryor Mountain horses is to appeal to the Livestock Conservancy as these mustangs might be considered a heritage-type breed. According to the Livestock Conservancy:

Heritage Breeds are traditional livestock breeds that were raised by our forefathers. ...These breeds were carefully selected and bred over time to develop traits that made them well-adapted to the local environment and they thrived under farming practices and cultural conditions that are very different from those found in modern agriculture. Traditional, historic breeds retain essential attributes for survival and self-sufficiency – fertility, foraging ability, longevity, maternal instincts, ability to mate naturally, and resistance to diseases and parasites. (Doremus, 2014)

For over 40 years the Livestock Conservancy has conducted research, education, outreach, marketing, and “genetic rescues” to help ensure the future of rare breed agriculture. Using this information, the Conservancy publishes America's list of endangered farm animal breeds and works to ensure those breeds aren't lost to extinction. Although all rare breeds face challenges, the Livestock Conservancy suggests that the recent market downturn has particularly impacted equine breeds in North America.

Heritage animals once roamed the pastures of America’s pastoral landscape, but today these breeds are in danger of extinction. Modern agriculture has changed, causing many of these breeds to fall out of favor. Heritage breeds store a wealth of genetic resources that are important for our future. (The Livestock Conservancy, 2020)

Endangered Equine Alliance Partners, who also focus on preserving the genetics and cultural significance of America’s first descendants of the Spanish conquistador’s horses, include: Santa Cruz Horses, Southwest Spanish Mustang Association, Spanish Barb Horse Association and the Spanish Mustang Registry. These horses, as explicitly stated in WFRHBA, are “living symbols of the historic and pioneer spirit of the West.” They are symbolic of our human history, whether or not

they are viewed as native. Our nation has a strong tradition of protecting history, not only with museums, but with landscapes such as Gettysburg National Military Park and Manzanar National Historic Site (The Livestock Conservancy, 2020).

Although registration as a heritage breed raises awareness concerning the historic value of these unique horses, the ESA provides the ability for wild animals to remain in their “wild” state. At the same time, the ESA, ironically, limits the social interactions and influence of humans. As an iconic cultural species, is such limitation appropriate? Preserving the cultural traditions of the Old West should also include the long-held traditions of indigenous cultures such as the Crow Indian Tribe, which has been involved with the Pryor Mountain horse herd for hundreds of years.

According to a Pryor Mountain Wild Horse Territory Report from the USFS, the Crow Nation inhabited the Pryor Mountains before European settlement and has kept horses, originally acquired from the Spanish, since the 1700s. According to Maggie Nutter:

The Crow Indian Tribe has a long tradition of being involved with the Pryor wild horses and of using that herd...Through the roundup and adoption program they have access to those horses that they've had for generations and generations. If you put that under the Endangered Species Act, you take that away, and I think that in itself is a shame. (Nutter as quoted in Ash, 2018)

Would the perception of over-restrictive measures on the part of the Endangered Species Act actually place wild horses in the wake of increased danger? Commentators against the use of ESA assert that the law currently encourages landowners to “shoot, shovel, and shut up” to escape its harsh prohibitions and penalties. For instance, Spitzberg (1994) cited Riverside County, CA farmers who deliberately plowed their fields to avoid occupancy by the protected Stephens kangaroo rat (*Dipodomys stephensi*) and shrimpers who slashed sea turtles' (*Lepidochelys kempii*) throats because of a requirement for the use of turtle excluder devices on shrimping nets. Such restrictions do not evoke a sense of harmony. On

the contrary, In the minds of those who feel their resources are threatened, the protected species has become the enemy (Kunich, 1994, p. 501; Spitzberg, 1994, p. 193; Sagoff, 1997).

Many believe that we have the responsibility to protect and restore only (or especially) those creatures who owe their precarious status to human actions. The eradication of the gray wolf in Yellowstone is one example. If we are to blame for a species' dwindling numbers, we should be held accountable for solutions. However, in the case of wild horses, there's an intense debate about whether horses, and the other large megafauna that formerly roamed North America, disappeared as a result of human hunting pressure or other causes. Even if humans did extirpate horses, that was some 10,000 years ago. The connection with hominoids from that distant past and the duty to bear responsibility for our ancestor's actions may not be felt by many (Doremus, 2014). At the same time, a second period of blatant disappearance of horses from the American landscape occurred in the mid-20th century. There is no doubt the responsibility for the perceived cruel methods of horse removal occurring under this era of "mustanging" was felt by the American public, as evidenced by their protest and enactment of the Wild Free-roaming Horses and Burros Act. Our loyalties and responsibilities, however, can vary greatly. At Sheldon National Wildlife Refuge in Nevada, for example, managers are trying to keep the wild horse and burro population down to limit damage to vegetation and competition with pronghorn antelope, while in the Heber Wild Horse Territory, there is concern for the preservation of habitat for the endangered Mexican Meadow Jumping mouse (Center For Biological Diversity, 2021; Gooch et al., 2017; Mann & Plummer, 1992).

In the "Old West" paradigm, the dominant anthropocentric belief surrounding land management is to save or provide for those creatures humans find useful, in direct ways. What utility in the form of food or fiber does the desired receiver of

protection provide for humans? Might there be some economic gain? Could the species in question offer means to enhance our health in some way? While big game species continue to provide for sport hunting and livestock provide food, leather and economic gain, the “Old West” use of horses (in the utilitarian sense as a servant) has passed. Are we to assume then, that wild horses are not *directly* useful? Like many aspects of nature, including endangered species, wild horses (in the minds of ranchers or sportsmen, for example) may be more of a minus than a plus on the “direct utility” scale, even though efforts by such groups as the Heritage Foundation or the “Unbranded” documentary that highlight the usefulness of mustangs are ongoing (Barbeau, 2015). While people do eat horse meat in some parts of the world, the majority of Americans view this idea with distaste and the advocates of wild horses in particular are strongly opposed to their use as food (Whiting, 2007).

The father of wildlife ecology, Aldo Leopold, doubted, as do many, that we know precisely where to draw the line between what is and is not useful. In “A Biotic View of the Land” (1939) he wrote:

No species can be “rated” without the tongue in cheek; the old categories of “useful” and “harmful” have validity only as conditioned by time, place, and circumstance. The only sure conclusion is that the biota as a whole is useful. (Leopold, 1939)

Leopold reminds us that the biota includes the physical components that collectively make up the land community. The viewpoint of those stakeholders who identify with the New West would validate that wildlife and wilderness, in fact, *do* have a useful purpose: it enhances our health and provides for the soul, protecting those features for most Americans are highly valued (Doremus, 2014; Mckinney, 2017).

While nativeness, naturalness, responsibility and usefulness have all been layered within our historic conservation laws, the paradigm of the New West, and wild horse advocates in this case, continue to call for a type of protection that also incorporates historic and cultural significance. At the same time, such statutes must

ensure the ability of this living remnant to remain wild, free from human intrusion. Remaining wild implies providing the space for behavioral and evolutionary processes to occur. The Endangered Species Act continues to be criticized by many for its over-restrictive measures and exclusion of cultural interaction with the protected species. The Wild Free-Roaming Horses and Burros Act is criticized for not being protective *enough* and for ignoring the importance of appropriate habitat for horses. While some see free-roaming horses as the “spirit of wildness,” to others they represent an obvious reminder that our landscapes are heavily affected by current and historic land use by humans. These “wild” landscapes, that large populations of perceived unmanaged wild horses inhabit, may increasingly feature desolate ecosystems, barren streambanks and close-cropped vegetation. Such a landscape may be indistinguishable from those produced by heavy livestock grazing (Brunson, 2020; Brunson, 2014).

After a thorough examination of the statutes and cultural history surrounding America’s West, the questions remain: Should livestock grazing persist as the dominant use of federal rangelands, as was the case in the twentieth century, or should policies be altered to favor recreational uses, or increased biodiversity and wild horse protection? How should federal land management address ecological fluctuations due to climate change, wildfire, and nonnative invasive species (as some might classify wild horses)? Whose concerns should have priority on rangelands that are held in trust for all Americans but are primarily maintained and reliant on by local residents?

Not only does the ongoing battle with management of wild horses emphasize the disparities in views and values on how the landscape should be managed, it underscores the ambiguities in some of our conservation goals and rangeland management practices. Expanded dialogue and a clearer sense of these goals is long

overdue. Given climate change and our evolving understanding of natural history, we're apt to discover in the coming decades that some goals are no longer attainable while others are in conflict to a greater degree than we had previously understood. Conservation's main goal has focused primarily on increasing biodiversity of ecosystems. It has become progressively evident that we need many things from nature and one goal may no longer suffice. The important thing to understand is where conflicts are likely to occur in order to tackle the issues of greatest concern. This simply cannot be done unless we have a clearer sense of exactly what it is we are trying to accomplish.

Old West and New West: Trust and the Merging of Values

Although the rangeland of the Old West has a history of being largely unproductive and undesirable, the New West is increasingly being appreciated through a new set of values. These shifting values, primarily from urban residents, have led to heightened debates among stakeholders surrounding land management and wildlife protection. Individuals who relate to the Old West opine that western rangeland management over the last half century has been turbulent and full of controversy due to the ushering in of outsiders who alter traditional values. These new in-migrants, they believe, are ignorant of rangeland management techniques and expose the region to ongoing dilemmas. According to the rural inhabitants of the West, it is the Old Westerners who understand land stewardship and how to minimize grazing impact so that future generations may also economically survive. Furthermore, they are of the mindset that the efforts of ranchers have safeguarded and continue to protect open spaces and public access. These Old West economic perceptions still exist in many rural communities and continue to shape much of the region's cultural mind-set. In the New West narrative, however, these old westerners laid claim to public land centuries ago that many advocates feel was not rightfully

theirs. As a result, they believe livestock operators continue to remain the recipients of preferential treatment on the part of the federal government (Havstad et al., 2007; Lybecker, 2020).

For decades, federal rangeland policy was essentially overseen by a small group of ranchers, agency professionals, and western members of Congress. As awareness of ecological impacts grew nationwide in the 1960s and 1970s, rangeland issues were of minor significance as activists focused on national forest timber harvest, air and water pollution, and wilderness protection. By the 1990s, however, some activists had turned their attention to public rangelands and grazing concerns as evidenced by the "Cattle Free by '93" movement. Further illustrations of the tensions surrounding the Old West–New West paradigm shift can clearly be seen in recent confrontations such as the occupation of the Malheur National Wildlife Refuge in Oregon (clash over the management of public lands), the controversial wolf management and greater sage grouse listing across the western plains and sagebrush ecosystems (concern for endangered species), the battle in the state supreme court over water rights and releases from Idaho's Lucky Peak dam (conflict over water rights), and the petition for wild horse protection under the Endangered Species Act (opposition towards management of a perceived "feral" species) (Dana & Fairfax, 1980; Starrs, 1994).

The fate of wild horses on western rangelands has become an issue of huge concern to a diverse range of stakeholders including New West affiliates who petition for the physiological and social needs of horses (animal welfare and animal rights organizations), those who share a concern for the ecosystem and biodiversity (environmental groups), or those who focus their interests on aesthetic value (recreationists and wildlife viewers). On the other hand, members of the Old West have their priorities set on maintaining their cultural way of life, economic gains

through extractive uses of rangelands (grazing, mining, timber), recreational opportunities that focus on hunting and fishing, and the continued use of off-road recreational vehicles (primarily by ranchers and sportsmen). Ecological evidence, supported by most environmental groups, university sponsored research and federal agencies (albeit, unsupported by horse advocate groups) suggests that horse populations are far above carrying capacity, with significant negative ecological costs as well as negative consequences for horse health and survival. Many animal activists and animal welfare advocates, who view the mustang issue through a different cultural and ethical lens, distrust those conducting the ecological research and are skeptical about the data collected on the wild horses and their habitat. They continue to regard horses as a valued icon of wildness; a native species well deserving of protection on public rangelands. At the same time, any perceived negative impacts of horses on the landscape are shouldered largely by rural residents and the surrounding rangeland where they live. If grazing is to occur at all on western lands, most traditional rural residents would prefer such grazing be conferred to livestock (Davies et al., 2014; Porter [rancher], personal interview, 2018).

An important cog in the wheel of the range management dispute is the distrust of land managers felt by urban residents and a feeling that policies and goals are skewed in favor of livestock operators. Trust in the abilities of administrative institutions has been declining in the early twenty-first century, but especially in institutions of the federal government. When trust in rangeland management agencies decreases, so do positive attitudes toward the policies and practices of those agencies. Research has shown that the best predictor of change in beliefs is trust in agencies' ability to implement practices safely and effectively (Beever et al., 2018; Tyler, 2016; Cooper, 2018).

Another factor that increases resistance towards rangeland management decisions is the issue of marginalization. Because resource uses often provide benefits to persons living in urban areas far from the western range, whether those rewards are largely financial as in the case of energy development, or aesthetically pleasing or symbolic as in the case of wild horse management, inhabitants of western rangeland regions can become disgruntled by the perception that their cultural traditions are being dismissed while external values, policies, and actions are being imposed upon their community and landscapes. This approach toward land management arises from the traditions of western European philosophy, specifically, the assumption that human beings are capable of removing themselves from and controlling the natural world. Indeed, much of what accounts for biodiversity protection comes in the form of policy that prohibits humans from participating in consumptive and non-consumptive activities through state-established protected areas. Well-intentioned laws, such as the National Environmental Policy Act or the Endangered Species Act have become unintentional documents of *exclusion* because of their sole reliance on scientific materialism to evaluate environmental impacts. The feeling of being cast aside after centuries of living off of the land they cared for and loved can lead to frustrations on the part of indigenous cultures or other rural residents and can result in increasingly bitter disputes as well as efforts to wrest control of rangelands from Washington, DC, through various means (Dongoske et al., 2017; Porter [rancher], personal interview, 2018; Gibson [rancher], personal interview, 2018).

A social and ecologic shift has transpired from the Old West to the New West over the past century; And with that has come new attitudes and a call for new legal responsibilities aimed at free roaming horse populations. Understanding why positions are so strong and so polarized becomes clearer when we recognize that the

debate is often not so much about wild horses but about culture, ways of life, social identities, power, and competing visions for future land use (Nie, 2001; Lute et al., 2014; Bruskotter et al., 2019). It is essential to recognize that public spaces and the species that should thrive in them are there, not only to be grazed by livestock or for hunters and their preferred prey, but also for other legitimate interests.

Furthermore, as noted by social-ecological researcher Michael Manfredo and colleagues, the majority of citizens and residents do not subscribe to the articulated views of hunters and ranchers on one side or animal rights activists on the opposite side (Teel & Manfredo 2010; Manfredo, Bruskotter, et al., 2017; Sullivan & Manfredo, 2022).

As social and ecological change continues, federal and state land management agencies must define how land management policies will be altered in the future. Can agency decisions surrounding wild horse management diminish marginalization by empowering local interests, without sacrificing the general public's interests in land held in trust for all Americans?

The solution may be found in policies that promote localized *flexibility* in tackling rangeland challenges while at the same time, retain federal control over the lands themselves (Brunson, 2020; Hilty et al. 2020). Recommended methods for addressing the complex issues embedded in federal rangeland management disputes require the increased use of social-ecological systems frameworks (Brunson 2012). Such approaches employ scientific analysis, stakeholder engagement, and agency expertise to focus on how social and political components of ecosystems interact with ecological components at multiple scales. Institutional flexibility, as opposed to inflexible laws and policies applied consistently across various ecosystems, can promote adaptive management and encourage flexibility in management tactics. Participatory approaches to problem solving and knowledge sharing have shown to

increase trust through frequent social interaction and mutual respect and are more likely to support sustainability and system resilience (Bestelmeyer & Briske, 2012; Hruska et al., 2017; Charnley, 2018; Partelow, 2018).

Evidence-based decision making should be the target, regardless of the vision individuals have about the future of land-use or conservation, which also differ regionally. Having high quality information on impacts of large herbivores (cattle, elk, deer, pronghorn and horses) – as well as their large predators – need to go hand in hand with developing a deep, evidence-based understanding of the cultural significance and symbolic nature of the mustang, and interpretation of their role in the local landscapes they share beyond opinions articulated by special interest groups. As the struggle between different paradigms of traditional land management versus environmental stewardship plays out in unique cases involving wild horse management, common assumptions that urban and rural people have categorically different values about wildlife conservation, or management actions, may turn out to be unfounded (Hare et al., 2021).

CHAPTER SEVEN

THE HEBER HORSES: TRUST AND LEARNING THROUGH COLLABORATION

Figure 10

Heber Wild Horses Remain at the Site of the Shooting of One of Their Band Members in the Heber Wild Horse Territory in the Apache-Sitgreaves National Forests (Hutchinson, 2018).



Compliance Through “Fear then Relief”?

In August of 2005, the Black Mesa Ranger District of the USDA Apache-Sitgreaves National Forests, posted a news release which stated, “the Apache-Sitgreaves National Forests in the next month will be removing some of the approximately 300 horses that are currently grazing a portion of the Rodeo/Chediski burned area near Heber, Arizona” (Heber Wild Horses, 2018b). Since they were first recognized and protected as a single band with seven members in 1974, the wild horses roaming this area had not yet had an official management plan drawn up by federal land management agencies as mandated by the 1971 Wild Free-Roaming Horses and Burros Act. Nor had population numbers been consistently recorded over the past thirty years (Heber Wild Horses, 2018b). Still, according to USFS personnel, numbers of wild horses had grown in 2002, after the Rodeo-Chediski Fire burned 23

miles of fences between the national forest and the adjacent White Mountain Apache Tribe's (Fort Apache Indian Reservation, FAIR) lands. The USFS alleges during this time that numerous horses migrated into the Heber Wild Horse Territory (and throughout the Apache-Sitgreaves forests) from the herds residing in neighboring FAIR lands. USFS personnel further claimed that many of those horses belonged to members of the White Mountain Apache Tribe or to private owners, and although the tribe reclaimed many of the horses, the USFS argued that the Heber herd ended up being much larger in 2005. While free-roaming horses in the Apache-Sitgreaves National forests (ASNFs) are the only wild horses in the state of Arizona with their own federally protected territory under the management of the USFS, it is presumed by many horse advocates that *all* horses inhabiting the 2-million-acre ASNFs are to be protected by the Wild Free-Roaming Horses and Burro Act of 1971; not just those found residing within the 19,700 acre wild horse territory (Heber Wild Horses, 2021; Herber Wild Horse Advocate, personal interview, 2018).

The concern propagated by the USFS in 2005, was a claim that wild horse herd populations, without proper management, would double every four years. The horses would therefore eventually destroy the ecosystem – particularly the recovery of recently burned areas – leaving nothing for other wildlife, or public lands cattle grazing. In the end, the horses would be among the victims who would starve to death. Animal welfare and animal activist groups, however, were not accepting the USFS interpretation of the science or the historical facts supporting USFS management approach. Instead, their belief was that government agencies often feign caring about the welfare of the horses and create scenarios that do not accurately reflect what is actually transpiring on western rangelands. Furthermore, the government's motives (in their opinion) could not be trusted because:

Behind closed doors the USFS and BLM talk of permanent sterilization, euthanasia of healthy horses, sale without limitation, and slaughter. All of this while having no proof that wild horse herds double in size every four years and that they are causing damage to our public lands. (Heber Wild Horses, 2018a)

According to representatives of the Heber Wild Horse advocacy group, the USFS actions exemplify “one of the most arguably deceitful, manipulative techniques in the art of persuasion;” what psychologists call the “fear-then-relief technique” (Heber Wild Horses, 2018a; Dolinski & Nawrat, 1998; Pinola, 2012). This method preys on a person's emotions by generating a perceived catastrophic scenario that leads to a great deal of fear or anxiety. After the manipulator creates the setup, they then abruptly relieve the stress by providing a solution to the apparent predicament. Following this rapid mood swing, the victim of the conspiratorial technique is disarmed, less likely to make mindful or rational decisions, and more likely to respond positively to various requests (Dolinski & Nawrat, 1998). The Relief from fear surrounding “overpopulated” wild horses would be provided, in this case, by the USFS in the form of massive wild horse “gathers” and removals to protect, not only the environment, but all wildlife, public lands livestock grazers, and the horses themselves.

The disparity in interpretation of the ecology surrounding the Heber wild Horses led to civil action. In September of 2005, the Heber Wild Horse Freedom Preservation Alliance and Friends of the Heber Wild Horses (local horse advocacy groups) sued the USFS alleging violations of the Wild Free Roaming Horses and Burros Act of 1971. Their action prevented all captures and removals of horses. The Plaintiffs won their case and in March of 2007 a Federal Court order issued the following ruling:

The Forest Service agrees to refrain from any gathering or removing of horses within the Heber Wild Horse Territory as well as, on the Black Mesa and Lakeside Ranger Districts (which are considered the Sitgreaves National Forest) until the Forest Service completes, with public involvement, an

analysis and appropriate environmental document pursuant to NEPA and develops a written Heber Wild Horse Territory Management Strategy. The Forest Service will involve the public, including the Plaintiffs, in scoping for this analysis. (USFS, 2008)

The Heber Horse advocates claim confirmation of the USFS historic use of the “fear-then Relief” tactic by pointing to the following: 1) There have been no “authorized” captures or removals of any horses in the ASNF since before 2005 when the USFS stated in their news release that there were approximately 300 horses in a portion of the Rodeo/Chediski burned area near Heber. 2) The USFS contracted for a horse-specific survey in February of 2015. At that time, 20 horses were estimated to be in the Heber Wild Horse Territory. Outside the Heber Wild Horse Territory (across the Sitgreaves National Forest) 201 horses were observed. The estimated population outside the Heber Wild Horse Territory based on Simultaneous Double-Count methodology was 236; for a total of 256 horses. 3) If wild horse herd populations doubled in size every four years, the data would illustrate that by the end of that ten-year period (2005 – 2015) there would be approximately 1,800 horses at the time of the 2015 survey. There were, however, only 256 horses. In 2020, the population numbers in the surrounding Heber Wild Horse Territory remain disputed; Claims by the USFS range anywhere from 400-600 horses (USFS 2021).

While there have been no authorized captures or removals of any horses in the ASNF since before 2005, some members of the public have taken it upon themselves to remove the horses *unlawfully*. The latest in a series of shootings aimed at impacting the Heber Wild Horse Herd population numbers, resulted in Apache-Sitgreaves National Forests Law Enforcement officials confirming, in a Jan. 13, 2021 press release, the deaths of four horses from gunshot wounds: three adults — including a pregnant mare — and one foal. The foal was found with fatal bullet wounds and humanely euthanized. A tip from the public also found a possible fifth deceased horse. Law enforcement continued to work with the Heber Wild Horse

Freedom Preservation Alliance and Friends of the Heber Wild Horses for an accurate total of dead horses. According to Apache-Sitgreaves, Black Ranger District Forest supervisor Anthony Madrid, "the seriousness of this and past horse-related incidents on the forest are of the greatest importance to me.... I am requesting assistance from our communities and publics to help us solve this case" (Madrid quoted in Onneweer, 2021). Earlier in 2020, 15 deceased horses were found between Jan. 9 and 14, several of which were confirmed to have died due to gunshot wounds. The separate shootings of two equine family groups were added to a string of similar incidents that claimed the lives of about two dozen horses on the Mogollon Rim since 2018. Another eight horses were found too decomposed to determine cause of death or were determined to have died by accident in 2018 and 2019, as disclosed by the USFS website. The mass shootings ranged from random to killing entire family units. According to Robin Crawford, a local Heber wild horse advocate as well as one of the founders of the Heber Wild Horses Freedom Preservation Alliance: "Last year's (2020) shootings were pretty random. It's like somebody drove up and down the road and just shot at what they could.... Foals, mares and the stallions were all killed." Crawford believes a "wild horse hater" could be responsible for the killings. In her view, no one else would take part in such horrific actions. In 2019, USFS patrols were increased in and around the Heber area in response to the killings. Due to the growing concern, law enforcement offered up to \$5,000 for information leading to the arrest and conviction of those responsible (Onneweer, 2021).

Further suspicion of the USFS alleged malfeasance and a lack of transparency was unearthed by the animal activist group American Wild Horse Campaign through the Freedom of Information Act after obtaining a May 10th, 1989 agreement signed by the acting forest Supervisor. The document announces the following:

This agreement authorizes to capture horses roaming at large on the Gentry and Buckskin Allotments and transfer them to the Sun Valley Auction after May 12, 1989. For these services (undisclosed name of "mustanger") will be paid \$100.00 per horse captured, plus reimbursement of feed and water at \$2.00 per head per day while horse are held, pending disposal by the U.S. Forest Service. For services received (the mustanger) will be paid from, with receipts from horses sold, or from the Forest Service account when receipts are not sufficient to cover expenses. The Forest Service will arrange for sale of horses in lots of 10 or more. During trapping periods which will be prescheduled by (undisclosed name) on the Heber District, traps will be checked daily. (Fitch, 2017)

During this same time, the Heber Wild Horse Herd remained a protected herd under the Wild Free-Roaming Horses and Burros Act of 1971. (Public Law 92-195).

The act states that:

It is the policy of Congress that wild free-roaming horses and burros shall be protected from capture, branding, harassment, or death; and to accomplish this they are to be considered in the area where presently found, as an integral part of the natural system of the public lands. (WFRHBA, 1971)

The upshot, according to the Heber Wild Horses Advocacy group, was that USFS was not only illegally authorizing the removals of wild horses, but they were also paying the ranchers to do so. Such documentation, in their belief, shows the disrespect the USFS has historically displayed for the Wild Horses and Burros Act and their willingness to break federal law in order to appease the "welfare ranchers." The practice of keeping free-ranging horses (horses that are not restricted to a particular area) for potential use by a livestock association or an individual, is still active on the Fort Apache Indian Reservation (FAIR), although it has not been done on public ranges in the U.S. for decades. As stated in the Wild Free-Roaming Horses and Burros Act, "any horse introduced onto the Forest on or *after* December 15, 1971, by accident, negligence or willful disregard of private ownership is not a wild horse." Such horses are defined as "unauthorized livestock." Traditionally, as livestock production on National Forest lands became more regulated, free-roaming horses were increasingly classified by U.S. Department of Agriculture (USDA) as "unauthorized livestock" and were steadily removed – as the 1989 document

revealed – either by herding them back over the Reservation boundary or by removing them to auction (Fitch, 2017).

The series of unfortunate events that have transpired in the ASNF since establishment of the Heber Wild Horse Territory in 1974, have culminated in an atmosphere of distrust and contempt for government land agencies by members of the “New West” (wild horse advocates, animal activists and environmental groups—see Chapter Six) as well as the feeling of marginalization by those identifying with the “Old West” (Federal and State Management Institutions, livestock operators, hunters and local rural residents of the area). A feeling of deception and betrayal was shared by many stakeholders as they increasingly became disenfranchised with current policy and efforts by the federal government to manage their public lands and provide for the welfare of the wild horses. As a result, distraught stakeholders embedded within the philosophy of the New West have taken it upon themselves to voice their concerns in the only plausible manner available to them: litigation; thus halting any management efforts on the part of agencies. Other stakeholders, supporting the Old West’s philosophy of wild horse management, have decided to become (in their view) heroes in their efforts to restore ecosystems or (in the opinion of those supporting the New West paradigm, the villain in the narrative) as they risked convictions and arrest to reduce populations of horses through a tactic that would deliver immediate relief: the death of horses through gunshot wounds.

Vigorously entrenched throughout the discourse between livestock operators, horse advocates, environmentalists, and agencies who continue to debate animal welfare issues and the perceived degradation of the environment where many of these free-roaming horses reside, lie deeply rooted feelings of oppression, dominance, entitlement, suspicion, misconceptions, anger, and biases, aimed, not only towards agencies mandated to manage the horses, but towards members of

other stakeholder groups involved, and towards the horse *itself*. Although there has been a recent increase in use of an organized, 'collaborative' group approach for multi-stakeholder input on federal forestlands in the western U.S. with the aim to increase public approval of agency management decisions, this approach relies on the creation of shared *trust* to achieve social agreement (Davis, Cerveny, et al., 2018). At the same time, growing critiques are suggesting, that there is a lack of trust for the collaborative process itself.

With Such disparity among various stakeholders in the local rural areas surrounding Heber and lack of confidence in the ability of agencies to manage the horses, how might such a collaborative approach be effective in the search for resolutions in the development of a management plan for the Heber Wild Horse Territory? What are the key factors in 'successful' collaborations that offer the potential to reduce further conflict between stakeholders? Can trust for Agencies be re-gained...after decades of *distrust*?

Conflict and Collaborations

According to social ecological researchers Steven E. Daniels and Gregg B. Walker, in *Working through environmental conflict: the collaborative learning approach* (2001), conflict in natural resource policy decisions consists of incompatibilities surrounding the capacity to resolve issues due to unique stakeholders involved, various understandings of scientific processes, and desired outcomes (Daniels & Walker, 2001). Sociologist Paul Wehr (1979) originally identified seven domains describing conflict "incompatibilities." All are evident in the wild horse management debate and can be described as:

1. Fact-based: when groups do not agree on the "facts" or "truth" surrounding the issue. What is the interpretation of the science of rangeland management? Are horses or cattle degrading the environment? Are horses

descendants of conquistadors or escapees from bordering reservation lands?

Shall they be classified as "native" or "non-native"? What are the accurate population numbers for horses? What are proper allocations of forage for cattle or horses?

2. Value-based: when groups do not agree on *what* should determine how a decision is made. Should managing Agencies provide for the welfare or rights for horses? Should a compassionate approach or traditional approach towards management be utilized? Should concerns for endangered species outweigh traditional ties to the land and maintaining a way of life?
3. Interest based: When groups cannot agree on who gets what resources (e.g., Should policy designate more habitat for mustangs, more habitat for elk, deer and pronghorn, increased protected areas for endangered species such as the New Mexico Meadow Jumping Mouse or increased grazing opportunities for cattle operations?)
4. Jurisdiction based: when groups disagree on who should be making the decisions. Should a top-down approach be utilized where government agencies and academics "experts" decide what is "best" for rangeland management and mustangs? Or a Bottom-up approach where stakeholders and those on the ground and involved in the issue provide solutions?
5. Person-based: when there are interpersonal compatibility or Trust issues. Distrust of the BLM or USFS on the part of wild horse activists, frustration with government agencies by ranchers due to perceived mismanagement of resources, animosity between ranchers and animal rights groups due to value differences.
6. History-based: when groups have diverse narratives describing their interpretation of the issue. Old West/Dominism approach where ranchers

assumed control when mustangs roamed over shared grazing areas versus 'New West' approach that focuses on various interpretations of environmental or animal welfare concerns through a mutualistic approach.

7. Culture-based: when there are disagreements caused by different components of culture. Various members identify with rural or urban settings.

For multifaceted controversies, such as wild horse management in the United States, it is essential to take into consideration the fact that resolutions are not always feasible. Instead, land and wildlife management agencies must look for ways to manage the *conflict* in order to make progress (Daniels & Walker, 2001).

Heightened public dissatisfaction over government decision making surrounding natural resource management grew in the late 1970s as a result of a shift in society's values, escalation in conflict among stakeholders, and uncertainty around conservation biology's ability to predict environmental impacts and unintended consequences for wildlife (and humans) as a result of agency decisions (Daniels & Walker, 1995). After the impact of Rachel Carlsen's *Silent Spring* and the general environmental movement of the turbulent 1960s, the role of federal agencies as expert managers came into question, and social acceptability of agency practices declined (Spies & Duncan, 2009; Hansis, 1995). The perceptions that environmental analysis was being conducted by hidden experts, and the growing litigious nature of the political landscape lead to a decline in trust between interest groups and public land managers, which, in the case of wild horse management, has led to conflict, litigation and even violence. It is generally recognized that, "natural-resource management policies...will fail if they are not socially acceptable" (Charnley, 2006, p. 337; NRC, 2013). Collaboration seeks to overcome such socially unacceptable policies and therefore reduce conflict.

As environmental and natural resource policy decision making continues to evolve, the general public and management agency personnel are increasingly seeking ways to "do things differently" in order to allow for significant public participation in the decision-making process as parties work through policy conflicts. This shift in decision making has resulted in an approach to conflict resolution where social-ecological challenges are addressed collaboratively. Collaboration, Co-management, and other forms of stakeholder involvement in natural resource management have been incorporated globally with wide-ranging impacts (Davis, Cervený, et al., 2018). Although it has many definitions, at its core, collaboration is problem-solving in which diverse, interdependent stakeholders tackle common issues and settle environmental disputes through deliberation, consensus-building, co-learning, and the creation of solutions (Davis, Cervený, et al., 2018(Goldstein & Butler, 2010; Margerum, 2011). The aim in collaboration is to inspire and guide top-down regulation in policy decision making to better reflect stakeholder interests (McKinney & Kemmis, 2011).

The broad aim of collaboration is to avoid legal challenges by addressing potential issues *before* decisions are made. By reducing social conflict over public lands management, resulting agency decisions will more accurately reflect stakeholder input (Summers, 2014). The operating theory surrounding how collaboratives function incorporates participation between multiple stakeholders and exchange of dialogue that builds *trust*. This hopefully encourages participants to reframe their respective values and interests into a collective agreement. At the same time, growing critiques of the collaborative approach imply that there are limitations to trust. Some view collaboratives as Agency-controlled venues that do not effectively represent all stakeholder viewpoints and operate through majority/minority decision processes that marginalize environmental input and fuel

further conflict (e.g. Singleton, 2019). Others contend that, there are individuals or groups with an agenda to limit or eliminate current management policies.

Collaboration, in this case can provide an opportunity to wear others down by dragging out meetings. These disgruntled stakeholders can then appeal and/or litigate after an extended collaboration process (Wynsma, 2014).

Successful Collaborations

Although success in stakeholder collaborations remains difficult to measure (Conley & Moote, 2003), there is continued interest in distinguishing the various factors that might characterize it. The majority of studies on successful collaboration focus on the relationship of a range of features including rules and standards for conduct, impartial mediation, regular meetings, skilled facilitation, supportive and consistent – but non-directive – agency participation, multi-party monitoring, use of field trips, and stakeholder diversity (Davis et al 2018; see also Butler, 2013; Cheng & Sturtevant, 2012; DuPraw, 2014; Schuett et al., 2001; Yaffee & Wondolleck, 2000).²⁸ While trust, as it pertains to natural resource collaboratives, is a complicated and tangled concept; it is highly regarded as an *essential* ingredient for 'successful' collaborations (Margerum, 2011).

Most research on trust and collaboration typically incorporates a broad concept of trust, where trust signifies a sense of good faith. Others have taken inspiration from earlier expressions in social psychology and define trust as, "a psychological state in which one actor (the trustor) accepts some form of vulnerability based upon positive expectations of the intentions or behavior of another (the trustee), despite inherent uncertainties in that expectation" (Stern & Coleman, 2015, p. 119). For government land managers such as the USFS, attaining the public's trust and social acceptance for their actions is a principal concern and a major motivator for engaging natural resource collaboratives. At the same time, if

efforts to obtain stakeholder input are not 'genuine' (e.g., agencies were forced into action through litigation) or there is the perception that Collaborations do not actually inform management decisions, trust can be easily lost or never built (Daniels & Walker, 2001). Furthermore, inclusion of diverse interests, long considered key to successful collaboration in general (Margerum, 2002), may in fact harm trust if new participants enter the arena rapidly and without following established norms (DuPraw, 2014; Levesque et al., 2017).

Recently, social-ecological researcher Marc Stern and colleagues pursued a new application of trust theory to better differentiate four types of trust in natural resource collaboration: Dispositional: the tendency or predisposition to trust a trustee; Rational: based on expectations of utility and belief in trustee's ability to achieve outcomes; Affinitive: willingness based on assessment of trustee's qualities; and Procedural: belief in the processes and systems for interaction with trustee (Stern & Baird, 2015; Stern & Coleman, 2015).

All four types of trust are relevant to natural resource collaboratives, and to the Heber Case in particular. 'Baggage' from past conflicts –going back decades to 'Wild Horse Annie' and her 'calling out' of agencies for perceived cruel treatment of mustangs – may challenge dispositional trust. Currently, widespread accusations from Wild Horse Activists on social media continually expose and alienate the 'experts' who have been mandated to manage wild horses (American Wild Horse Campaign, 2020d). Given the hopes that collaboration will achieve many diverse outcomes, for a wide diversity of stakeholder interests, rational trust in others' ability to *deliver* those benefits may be important, especially in stakeholder trust of various agencies (the USFS or BLM for example). Procedural trust, however, may be the most relevant component in the Wild Horse management. Procedural Trust may facilitate action, by creating an environment that reduces vulnerability, when other

forms of trust are absent and is the 'most actionable' for those looking to build or improve a collaborative effort. At the same time, overreliance on procedural trust, may inhibit the full development of other types (Stern & Baird, 2015), or increase the risk of process fatigue. Some environmental stakeholders have demonstrated a lack of procedural trust through their arguments that decision processes and composition of collaboratives is unfair, while others' characterization of environmental groups as 'dragging out' collaborative processes suggests both a lack of affinitive trust in those stakeholders and a belief that the process does not work. However, there is yet little empirical work exploring how different trust types of function and interact in the now widely adopted forest collaborative model.

My aim in examining the Heber Horse conflict, is to contribute to the research involving trust in natural resource management (e.g. Davenport et al., 2007; Lachapelle & McCool, 2012) by exploring how trust is established and maintained during the collaborative process to achieve agreement, and how trust might be damaged or severed. A case study approach can offer new insights into the functions and limitations of the collaborative management approach; a practice that is currently perceived as central to federal agency governance. An understanding of how the Heber Territory Working group's efforts unfolded can further add to the empirical knowledge on recent theoretical developments about trust in natural resource collaboration (Stern & Baird, 2015; Stern & Coleman, 2015).

The Heber Wild Horse Territory Collaborative Working Group

"Heber horse management is the modern resource challenge that we face – there are ecological issues, animal welfare, policy, and needed public support – it has everything that defines current natural resource management nowadays" (Ruyle [Heber Wild Horse Collaborative Working Group Member & Range Ecologist], personal interview, 2017).

Amidst the pinyon-juniper woodlands of the Black Mesa Ranger District atop the plateau of the Mogollon Rim, Arizona State University's School of Sustainability began convening an extensive dialogue with a diverse group of stakeholder representatives – many of them with ties to the rural ranching and recreational tourist communities of Heber and Payson Arizona. This collaborative working group was formed as a result of a 2007 Stipulation Agreement the USFS had entered into whereby the agency agreed to refrain from gathering and removing free-roaming horses from within the 2-million-acre Apache-Sitgreaves National Forests (ASNFs). Following passage of WFRHBA in 1971, the ASNFs was surveyed for wild horses, and the HWHT, covering 19,700 acres, was established near the town of Heber. After the 2002 Rodeo-Chediski fire burned approximately 23 miles of boundary fencing between the ASNFs and the adjacent White Mountain Apache Indian Reservation, (Fort Apache Indian Reservation, FAIR) large numbers of horses moved into ASNFs lands. The proposed round-up of these horses was litigated by wild horse advocates. (See Chapter One).

The 2007 agreement not only included a legal halt to gathers, but a stipulation to collaboratively engage the public to complete a territory management plan for the HWHT as required by the Wild Free-Roaming Horses and Burro Act of 1971 (WFRHBA) and the 1976 Federal Land Policy Management Act (FLPMA). The issue at hand involved concerns surrounding the desired ecosystem outcome for the Heber Wild Horse Territory (HWHT) as well as policies that would regulate the welfare of the nearly 500 "unauthorized" horses who, according to the USFS, had recently taken up residence and were roaming in areas outside of their federally protected territory. The development of a Management Plan was viewed as critical to provide for the sustainability of the area's natural resources and for the horses of the HWHT.

Through an in-depth interview process (see Appendix F and G) members of the Working Group (WG) were carefully selected by Arizona State University (ASU) and environmental conflict mediators, Southwest Decision Resources (SDR) to exemplify the numerous and wide-ranging concerns related to management of the HWHT. It was hoped that these diverse narratives and interpretations of the needs of the horses and the landscape could be presented within the collaborative between participants. Working group members were identified as: wild horse advocates, (supporting a concern for animal welfare/ animal rights and involved in various equid endeavors from recreation to wild horse photography and equid rescue); livestock permittees (ranchers and cattlemen who had family ties to the area for over a century and maintained rights to grazing allotments that overlap the HWHT); wildlife specialists (some retired wildlife managers, some involved in Non-government organizations with a concern for native wildlife or Big Game species in the area); Range management scientists (a professor from the University of Arizona and the lead coordinator for the Wild Horse and Burro program in Arizona)and veterinary medicine (specializing in wildlife animal science). The USFS, Arizona Game and Fish Department, and the Arizona Department of Agriculture, acted as advisors and “participant/observers” to the WG.

The Heber Wild Horse Territory’s collaborative Working Group meetings were conducted in an attempt to maintain transparency and build trust between the federal agencies and the general public while also allowing interested parties to contribute to the planning process for the HWHT. Furthermore, it was crucial that all-inclusive viewpoints were heard, and the participants were provided with the additional opportunity to review and offer input after management plans were authorized by participating agencies. With support from the USFS and Cooperating Agencies– ASU’s view was that a collaborative, citizens-based dialogue could provide

important input and recommendations that would inform the development of the Plan. It is important to note, however, that ASU's Working Group had no actual decision-making authority, nor did it have a formal advisory role to the USFS. Working in cooperation with SDR, ASU planned and facilitated discussions over a 15-month period, from August 2017 to October 2018. The process included 11 formal Working Group sessions, including a field visit to the Territory and numerous smaller task group meetings and discussions. Working Group participants reviewed all relevant documents, drew on input from the USFS, scientific publications, and from their respective constituencies, and engaged in frank conversations to arrive at their recommendations (see Appendix B).

Formation of the Working Group

Several initial meetings with the USFS and Cooperating Agencies were held by ASU and SDR in efforts to develop plans and protocols for the Working Group. This ensured that the objectives of the HWH working group's process would be consistent with, and complementary to the USFS's broader objectives of developing a management plan for the Territory. During an initial organizing meeting in August 2017 in Payson, draft protocols were subsequently reviewed, edited, and approved by Working Group members. As outlined in the protocols, Working Group participants agreed on the following goals for the collaborative process:

- Provide input into the development of the proposed action – to be analyzed under the National Environmental Policy Act (NEPA) for the HWHT Management Plan and include a monitoring approach with measurable indicators and protocols for incorporating information into an adaptive management framework.
- Provide a platform for learning, analysis, and discussion that strives for solution-oriented contributions to the HWHT Planning process.

- Encourage collaboration (but not necessarily consensus) in development of contributions to the ASU/SDR invited the USFS and Cooperating Agencies to participate as observers and resource persons during Working Group deliberations.

Interview Process and Selection of Interviewees

ASU and SDR jointly conducted 28 phone interviews between April and July, 2017. Selection of interviewees were based on those stakeholders and valuable resource individuals acquainted with wild horse management issues, especially those related to the Heber Wild Horse Territory. The interviews were conducted to accomplish two important initial goals: 1) Obtain a broader and more comprehensive understanding of issues related to wild horse management in the Territory, and 2) determine appropriate candidates for participation in the Working Group. The interviews underscored stakeholders' unique perspectives on wild horses and natural resource management issues on the HWHT, and provided a foundation of key themes and major insights that helped frame subsequent discussions with the Working Group. A full summary of the assessment results is provided in Appendix B; Comments are organized in the following categories: 1) History of involvement in horse management (local, regional, national levels); 2) Areas of Perceived public agreement; 3) Issues and challenges faced in Management (Key themes); 4) Information needed; 5) Views of successful management.

Assessment of Potential Working Group Members.

While Working Group members were selected by ASU/SDR to represent a wide spectrum of stakeholder views, the final selection of participants were based on criteria in which desired members would: represent an important stakeholder group or interest, demonstrate knowledge and experience with wild horses and/or the Heber Wild Horse Territory, understand potential outcomes of the collaborative

process, contribute a valuable perspective, demonstrate commitment to constructive collaboration and exchange, think creatively about the issues and potential solutions, contribute useful information to the process, be accessible via email and have good access to the internet, be available and willing to commit time to the effort, and fill an important role within the Working Group. As aforementioned, the process was not designed to achieve consensus, but to provide the broadest possible input and consideration to the USFS and Cooperating Agencies. In addition, ASU/SDR hosted a Google site exclusive to the Working Group, to provide access to relevant background documents, meeting agendas and notes, and drafts of WG products.

The Heber Horses and the Contested Meaning of Nature

After nearly two years of immersion in the Heber Working Group meetings, field trips and ride-alongs, I had clearly come to appreciate the fact that that this debate over wild horse management was not about the horse, per se. Nor could the cultural and increasingly political identity surrounding the dispute be solely resolved by the collection of ecological and biological data. Some may find it tough to comprehend why some people express such vehemence and disdain and others express such admiration towards wild horses. These insights are clearly evident in the following five stakeholder views and the corresponding desired management extracted from my interviews. Should we manage horses as wildlife in balance with nature, to the exclusion of economic interests, or as Exotic Trespassers invading our landscape? Should free-roaming horses be managed for their economic value or as valuable partners in the ranching or recreational industry? Or perhaps we simply leave nature alone and recognize the right to autonomy for all species?

Wildlife in balance with nature: Eliminate Cattle and Maintain Healthy Mountain lion populations

The goal should be healthy waters and riparian areas (and associated plant communities), healthy meadows with healthy populations of other wildlife, healthy predator populations – as mountain lions will take down wild horses –

and *full elimination of cattle* right off the bat. (Gitlin [Sierra Club representative], personal interview, 2017)

Exotic trespassers: Shoot Horses

Treat the horses as exotic animals and *shoot them*, but this is not societally acceptable...horses cannot be killed, then you have to lower the excessive numbers of ungulates. We all own the animals – not just the horse lovers. (Koleszar [Arizona Deer Association], personal interview, 2017)

Utilitarian/Economic Value: Train wild horses to suit human needs

Catch the wild horses, if you catch them the right way in 3-4 days we can *sell trained horses*. Horse advocates think are helping out by leaving them out on the landscape. It's a white way of thinking. (Joslin [Horse wrangler, White Mountain Apache Tribal Member], personal interview, 2017)

Dominion over Domestic Livestock: Manipulate fertility and social structure of Bands

The easiest way would be to eliminate/keep a limited number of studs. My ideal would be 1 stud and maybe 7 mares, once a stud colt starts to reach breeding age they would be taken out of the herd...done through water or salt traps to separate them out. Like *managing any livestock* operation. (Porter [rancher], personal interview, 2017)

Mutualistic Relationship: Compassionate concern for equid family members and their right to autonomy

Agencies do not manage herds without interference that disrupts natural social structure. When horses are not disrupted by management activities, the birth rate is not very high. Destroying family bands through management interference discourages baseline healthy behaviors. (Hauser [Heber Wild Horses Freedom Preservation Alliance], personal interview, 2017)

While these views might be perceived as extreme to some, it became apparent, over the years of immersion in stakeholders concerns surrounding the wild horses and also through the Working Group process, that the majority of stakeholders do not subscribe to the most loudly articulated views of hunters and ranchers on one side or animal rights activists on the opposite side (Teel & Manfredo, 2010; Manfredo, Berl, et al., 2021; Sullivan et al., 2022). At the same time, a diversity of opinions and beliefs are necessary in understanding all aspects of the wild horse management debate. Although members of the working group presented various narratives, they demonstrated the ability to work through such differences

and friendships began to develop through involvement in active learning opportunities and shared experiences outside of the meeting room—These included such educational opportunities as: a field trip to the Apache-Sitgreaves forest and the wild horse Territory where range scientists, ranchers and horse advocates shared their understanding and knowledge of the horses and the surrounding landscape and other informal gatherings, such as the picnic in the forest hosted by one of the local ranchers. Smaller assigned task groups also provided the opportunity for sharing and engagement.

One primary social outcome often attributed to trust, is the ability to reach a 'collective agreement' about natural resource management through collaborative working groups. Yet, trust is also at times considered a successful outcome unto itself (Davis et al. 2017). How might the interplay of collective agreement and trust play out in the Heber Wild Horse Working Group?

Working Group General Recommendations for the Heber Wild Horse Territory

The following sections have been assembled to summarize my findings from various narratives expressed throughout the interview process of 28 prospective Working Group members and assess how these individual views became incorporated (or not incorporated) into The Working Group's initial goals. It is important to note that quotes were utilized from *potential* members and not all were selected for the working group. Subsequent findings and recommendations from selected members were grouped into the following four categories: horse population management, multiple use and forage allocation, desired ecological conditions and Science and Management (see Appendix B). Working Group's findings were presented as collective input, not consensus *agreement*, for consideration by the USFS and Cooperating Agencies in developing planning documents as mandated by

WFRHB Act and FLPMA. A Complete draft of recommendations of Working Group and smaller task group deliberations is attached in Appendix B.

Horse Population: Origins and Numbers

The main concern regarding the wild horses –and a huge point of contention – was the disagreement on baseline information surrounding the physiological condition, existing population numbers, origins (“wild,” “feral” etc. see Appendix A), and occurrence of wild horse immigration from the Fort Apache Indian Reservation (FAIR) through the damaged fence line and on to the ASNFs.

Disney and tv shows about wild mustangs makes people love horses, I don't have any objection to horses, but I do have a problem with the mis-labeling of these as descendants of Spanish mustangs. They don't do a lot for the habitat and just create more destruction. (Koleszar [Arizona Deer Association], personal interview, 2017)

As a young man, there was a study done for 7 wild horses (buckskin stud, albino mare, black mare, sorrel mare and 3 colts/mares/fillies) and there is a sanctuary (the HWHT) for those. In 1966/67 – a huge snow that killed the mares, sterilized the stud and the colts that were left never multiplied and they all died off. It was set up for 7 horses (belong to Uncle Arnold, branded H4 on all of them), not sure why (protection) needs to be extended out to ALL horses. (Porter [rancher], personal interview, 2017)

Porters and Shellys settled here and we ran domestic horses like I run cattle. We shipped the best ones back east for riding and pulling carriages, they would bring back studs and breed them with their mares. (Porter [rancher], personal interview, 2017)

We have *proved* that the horses had always been there and that they didn't all come from the White Mountain Apache reservation after the fire.... They are descendants of Spanish Conquistador horses, part of natural environment. (Irvin [Horse advocate – Terra Wind Eco-Ranch], personal interview, 2017)

Before a specific Appropriate Management Level (AML) for the horses could be determined, a better understanding of the social organization, behavior, foraging habits and population dynamics would need to be established. Without such information it would be impossible to ascertain when and what type of wild horse management actions (contraception, removal, etc.) would be needed and what course of action should be taken. A prime goal for the Heber wild horses would

therefore include research and the collection of scientific data as well as continued monitoring of the various bands. Suggestions from the group included the development and use of a band book to track various horses and their associated family members. Once wild horse numbers and migration patterns were established, primary recommendations would include establishment and maintenance (at AMLs) of only those horses associated with the HWHT. Without question, it was a belief by some in the working group that there was an urgent need to eliminate or minimize the perceived “trespass” horses that were allegedly entering the HWHT from FAIR. All of the horses would need to be managed with a concern for public safety by reducing horse-related impacts with vehicles on Highway 260.

Concern for animal welfare was also a major issue, particularly among those who identified as a wild horse advocate (with a concern for both animal welfare and animal rights). Although most in this group desired to keep the horses as wild as possible they expressed the urgent concern to develop a drought management plan which may necessitate supplemental feeding and watering, at specific locations during specific times throughout the year.” In order to assess physiological conditions of the horses, body health scores of individuals should be documented to characterize the “healthy population of individual wild horses” (utilizing the standardized Henneke scale) – It would also be important to consider age range within a herd and overall herd condition. Advocates appeared to have mixed opinions on the use of fertility control, such as PZP. At the same time, there were a few in the advocate group who expressed the desire to “let nature take its course.”

Multiple Use: Ungulate Forage Allocation

Although it was acknowledged that forage allocation should consider foraging habits and preferred diet of horses, many members stressed the importance of balancing those needs in an *equitable* manner – as mandated under the Multiple Use

and Sustained Yield Act and Wild Horse and Burro Act – by also taking into account the diverse needs of wildlife and cattle. Some statements reflected ongoing disagreements among stakeholders, including the belief that overgrazing from horses impacts cattle forage abundance, availability, utilization, and overall grazing capacity over time. In the permittees view, cattle have a legal allocation of forage on permitted grazing allotments, whereas horses (as described by WFRHB Act) do not. There is a perceived lack of fairness that only cattle use is monitored, and the USFS responds to monitoring data through pasture rotation or changing stocking rates.

Everything on the Forest Service (allotments) are monitored, our cows are monitored, on our contract we leave 25% of our grass. We are required to move if the FS feels like we have overgrazed. Every time we move from a pasture, I go out with someone from FS to count the grass. By the time we move into the pasture where the horses are we could be at 15% and our 60 head of cattle (5 months, starting in June) can't move in there, the horses stay in there all year. ...(horse grazing) data isn't taken into account, it only is recorded that the area is overgrazed, and *the rancher is at fault*. (Porter [rancher], personal interview, 2017)

Adequate water resources within the surrounding territory (Black Canyon Lake and any trick tanks) would need to be monitored (by permittees who are contracted to do so) and maintained to ensure all wildlife, cattle and horses would have equal access. Some ranchers and wildlife ecologists made the claim that horses are dominant at water resources (i.e., mule deer and elk will not come to the area if horses are around) while animal activists maintained that this was a false claim (discussed later).

Desired Ecological Conditions

Based on the traditional philosophy supporting 20th century conservation biology, many members of the group (livestock grazers, range specialists, wildlife specialists), supported the science that informs a compositionalist approach towards ecosystem management (employing such terms as “native/“non-native” species and aimed at restoration to a desired pre-industrialized era-see Chapter Five). Regulation

under current USFS policies (e.g., Public Range Improvement Act and Federal Land Policy Management Act) would be accepted as the standards to follow. Habitat conditions would be informed by soil and slope of existing areas and members agreed that they would utilize Forest Plan language for guidance. Current Habitat types such as pinyon and juniper, canyons, oak woodlands and grasslands, were to be carefully managed and monitored. It was noted that Pinyon and juniper habitat descriptions needed further clarification and distinct management (i.e. not lumped together as one habitat type). Additionally, the group pointed out that open mosaic and canyon/drainages should be managed differently as a habitat/ecosystem. Grasslands (and therefore available forage for livestock and other ungulates) would be enhanced through the control and reduction of shaggy bark juniper. The grassland community (including forbs) would be further broken down into cool (perennial) and warm season species (in order to plan for time and intensity of use in livestock operations).

Science And Management

In keeping with traditional restoration efforts, pre-settlement conditions for Ponderosa Pine would be established as the baseline for management. This implies that traditional forestry techniques would be utilized to maintain healthy age (young vs. old) of tree stands and a diversity of understory (shrub) species. Members were aware of concerns for the endangered native New Mexico Meadow Jumping Mouse that inhabited these meadows as numerous lawsuits against the USFS in New Mexico and Arizona had been filed by a nonprofit conservation group dedicated to preserving endangered species (Bair, 2015, p. 295; Center for Biological Diversity 2019; Center for Biological Diversity, 2020), for failing to ensure that its actions would jeopardize the mouse. It would therefore be crucial to focus on the health of riparian ecosystem(s) and wet meadows. Measurement of compaction, stream bank

alteration, and forage utilization were designated as important indicators for Adaptive Management. Continuous monitoring of the area would incorporate trend, functionality, species composition, age class, Proper Functioning Condition (PFC) measurements (if done consistently) or Multiple Indicator Method (MIM) (which the group noted as being more time consuming) – The Standard Precipitation Index (SPI) was discussed as a necessary tool to monitor drought conditions.

While the overall the ecological goal would be to maintain a resilient landscape capable of supporting a healthy horse herd, healthy wildlife populations and continued livestock operation, elements of trust and transparency had the potential to railroad all efforts for consensus.

Trust and Transparency

Each of the defining characteristics of Stern’s Trust theory—Dispositional, Rational, Affinitive, and Procedural – were all deeply embedded within the Heber Wild Horse management controversy. Many respondents indicated that trust and transparency were challenging aspects of managing horses in the Territory, primarily surrounding the relationships between horse advocates, ranchers and USFS personnel. Some respondents also indicated that the threat of injunctions and lawsuits, and political pressure, locally and statewide, presented challenges to managing the HWHT. Another key area of concern was USFS staff turnover and the inability of the USFS to carry through with the working group’s recommendations. Certain members in the ranching group specifically expressed the need to defend their way of life as well as their frustration with the inability of USFS personnel to support their efforts.

People accuse me of being a horse hater – the last thing I am going to do is hate a horse. I earn my living on the back of a horse. (Gibson [rancher], personal interview, 2017)

People get mad at us ranchers. The fence is down, people cut it and we have to repair it on our allotments. (Porter [rancher], personal interview, 2017)

Until the Forest Service grows a back bone they won't admit that horses need to be removed. Everyone I know and talk to agrees and are dead set against the horses being in the forest. (Gibson [rancher], personal interview, 2017)

I don't want to sit through this interview, then have to sit through lots of meetings, only to be screwed by the Forest Service. I'll do the interview, but if I am to participate in that deal, we will *push* the Forest Service to take those recommendations and not waste our time on these issues that are highly emotional and highly political. (Bray [AZ Cattleman's Association Member], personal interview, 2017)

Does it matter what we do if the people way up high won't enforce the law? (Porter [rancher], personal interview, 2017)

A Horse Advocate expressed their own concerns dealing with distrust and fear (Hauser [Heber Wild Horse Advocate], personal interview, 2018):

I am used to having (special) permission to photograph, stay longer on some areas than the typical 14 days – now, the FS won't even talk to me or stop their vehicle to talk to me.

It's hard to get local people involved because they are scared of the rancher's threats.

I have seen more distrust once this issue came off hold (last 3 years). The Seibert cattle company is based out of Texas. It is hurtful that they have no investment (personal) in the local economy or its lifestyle –They have too much power. Larry Gibson (local grazing permittee) does not own the cattle He just manages them. The locals are scared of him and the Seibert's.

The distrust of government agencies' use of science is further illustrated in the Wild horse advocate's contention that horses are NOT dominant over other wildlife species in their efforts to secure access to water as the USFS and other research supports (see Figure 11). According to the Heber Wild Horse advocacy group, misinformation is being spread by the employees of federal and state agencies when it comes to wild horses. Their belief is that those in power are literally making "life and death decisions for America's wild horses based on fabricated data and hearsay often fed to them by special interest groups" (Heber Wild Horses, Facebook post, 2014). In July of 2018 one of the members of the Heber Wild Horse group revealed the following:

Yesterday In speaking with an Arizona Game and fish Department statistician about the forest creatures including the Heber wild horses, elk, wolves, and even the non-native, privately owned cattle, one of our members was told

that the horses are the biggest detriment to the forest. When our person brought up the fact that there are far more elk and cattle who graze the forest than horses, the AZGFD employee was quick to say that she wasn't talking about the population numbers but that horses guard resources and prevent other animals from using them. When our person challenged her on that by saying the horses get along just fine with the elk and cattle, she piped up by countering that maybe they do when resources are plentiful, but not when resources are scarce. Obviously, the ASGFD statistician does not know the facts. (Heber Wild Horses, Facebook post, 2014)

Figure 11

Heber Wild Horses and Elk Sharing Water (Heber Wild Horse Advocates, 2018)



The Heber Wild Horse Facebook page proceeds further by describing the response of wildlife

During the drought of 2018, which many have said was the worst they have ever seen, people from our group hauled water out water tanks and provided water, often twice a day, to areas where wild horses were fenced in by cattle allotment pasture fences preventing them from being able to migrate to water sources. Our water haulers saw many elk while out in the forest. Their game cameras captured milk and wild horses gather peacefully around the water tanks.

Water is a sacred resource and could not have been more scarce than it was during the drought. The only available water in this area at the time was the water our haulers brought in. There was never any sign of one species of animal guarding or preventing another species from having access to the water. Yet misinformed or uninformed people working for government agencies in power continue to "catapult the propaganda" in their ongoing assault on America's wild horses. It's time for the truth to be told and the false narratives to be laid to rest. (Heber Wild Horses, Facebook post, 2014)

In addition to a desire to lay to rest claims of horse dominance at water sources, most horse advocates additionally deny the USFS and BLM's claim that there are not adequate numbers of predators in wild horse territories to naturally control population numbers (therefore necessitating the need for periodic "gathers." Horse advocates spoke of nature as a state of interdependence in which predator and prey accepted the symbiotic need for each other, as long as *humans* were not acting within the role of predator. Far better to have a mountain lion ending the life of a horse than a bullet fired from a human's gun. Simply put: Predation from a mountain is natural; Predation from a human is not. in the opinion of most wild horse advocates, simply need to stop disrupting the ecosystem.

Animal activist Groups (those who promote the rights of animals *in addition to* providing for their physiological welfare) further opine that humans should stop interfering with the *rights* of wild horses. This was illustrated by their protests against the un-natural means of equid fertility control through the use of the vaccines such as GonaCon or Porcine Zona Pallucida. While wild horse herds residing in the Salt River have been effectively controlled by the use of fertility control (darting horses with PZP) the Heber Wild Horses advocates groups believe that these wild horse nonprofit advocates are violating the intent of the 1971 Free Roaming Wild Burro and Horse Protection Act by harassing wild horses with firearms (Salt River Wild Horse Management Group, 2022). Clearly, the intent was not to have herds of wild horses and burros artificially managed as if they are livestock. Accordingly, opposition to PZP is based on an ethical belief that wild animals should be free of human manipulation. Several members of the Heber Wild Horse management group support William E. Simpson II, the author of 'Wild Horse Fire Brigade', a new plan to save wild horses via re-wilding them in a humane manner that is both ecologically and economically appropriate. Their belief is that:

Non-profit wild horse activists and their organizations who condone or support the policy of chasing wild horses around the landscape and shooting them with high-powered firearms containing chemical contraceptive darts weighing 500-grains or more, are indirectly culpable in what is arguably harassment of wild horses. (Simpson, 2021)

Furthermore, the Heber group contends that the use of any contraceptive chemicals on wild horses is in fact a form of 'selective breeding'. Horses that are treated, cannot have foals, while the untreated do have foals. The person pulling the trigger decides which mares (and genes) are selected. The act of choosing which animals get to breed and which do not, is 'selective breeding,' and that is part of domestication. They additionally believe that the decision is based upon a horse's appearance in the eyes of a person engaged in shooting horses, or which horse is a convenient target. And even with a genetic analysis of the target horse(s), it is still a form of selective breeding. They argue that the use of the contraceptive chemicals known as 'PZP' and 'GonaCon' have a seriously adverse effect on the gene-lines of native species American wild horses (Hauser [Heber Wild Horse Advocate], personal interview, 2018).

Many stakeholder interviewees stated that the human aspects will be most challenging in developing recommendations for successful management of the Heber Wild Horse Territory, due to such concerns as perceived *non-science-based* horse advocate's approach and their heightened emotions as well as the belief that horse advocates had a lack of common sense. Further concerns aimed at other stakeholders included inability to compromise, collaborate, get along or find areas of agreement. Some also expressed concerns about a general lack of understanding about the issues and, particularly, about rural lifestyles.

They [the advocates] care only about their pet horses that they have names for ...don't get me wrong, I like horses too and know about their power and strength and unpredictable behavior.... Horse advocates are *uneducated* and do not understand effect on ecosystem. They only value ONE species. (Koleszar [Arizona Deer Association], personal interview, 2017)

The primary concern will be having feed for them, and to come to an understanding with the people that are in favor of letting them take over with no management. That is a problem we have been dealing with. There is *not a lot of common sense* with protecting these animals: who is going to pay for it and the impact on viable resources that make other people their livelihood – timber, livestock, recreation – a lot of people with interest not just horse advocates. (Porter [rancher], personal interview, 2017)

You will have trouble getting ranchers to agree to anything except what they want. Ranchers have a right to the land, but our government needs to realize that the ranchers have thought that they own the land for years. (Crawford [Heber Wild Horse Preservation Alliance], personal interview, 2017)

Response from Participants and the Public

Undeniably deeply rooted throughout the discourse between livestock operators, grazing permittees, horse advocates, wildlife and Range specialists, environmentalists, and Agencies who continue to strive for healthy horses and healthy ecosystems, lurked those continued emotions of oppression, suspicion of entitlement, misconceptions, anger, and biases, that had the potential to lead to the feeling of a lack of inclusion and inequity. Although in 2018, the Heber Working Group reached a 'collective agreement' (albeit not total consensus) to present to the USFS surrounding a management plan for the Heber Wild Horses, would the Working group members themselves feel their efforts were worthwhile? Did the Group achieve all they set out to do?

According to Apache-Sitgreaves National Forests Supervisor's Office, Information Assistant Steven M. Johnson, "one of the primary goals of the collaborative's working group was to come up with practical solutions that could *actually* be implemented." In other words, the USFS was tied to regulating policies such as FLPMA, WFRHB, NEPA and ESA that could prevent implementation of desired recommendations. Following publication of the working group's recommendations, *The Independent* solicited comments from group participants and members of the public. Reaction from work group participants (shared below and in ASU's press release) appeared positive and hopeful (Singleton, 2019).

The collaborative effort was an amazing process of bringing a knowledgeable, dedicated group of volunteers together to review extensive information from experts with the result of providing better management options with the goal of protecting the Heber wild horses. (Soleil Dolce quoted in Singleton, 2019)

The Working Group came together presenting positive and fair recommendations for the management of the Heber wild horses. (Barbara Rasmussen quoted in Singleton, 2019)

I believe the collaborative has offered a balanced set of recommendations that will allow for equitable sharing of resources for horses, elk, and cattle in the Heber Wild Horse Territory. (Vashti "Tice" Supplee quoted in Singleton, 2019)

At the same time, some Heber wild Horse advocates involved in hauling water to the horses during the 2018 summer drought, continue to express disappointment in the recommendations in the report and feel that their voice in the matter was not adequately represented. Several of these opinions (below) are expressed by horse advocates who were interviewed, but were not selected to serve as a working group member.

The collaborative board had a pre-set agenda which was to remove all free roaming wild horses from the Apache-Sitgreaves National Forests. In reviewing their recommendations, they talk in circles, and it's not based on facts. This is a huge waste of taxpayers' money. (Robin Crawford quoted in Singleton, 2019)

The Heber Wild Horse Territory collaboration was typical of so many government programs that are designed to solve a problem that does not exist. (Michele Anderson quoted in Singleton, 2019)

The following Wild Horse Advocate working Group member served for a period of time within the collaborative, however, it was perceived by the working group that she was not operating within the guidelines, protocols and agreed-upon goals for developing recommendations specific to the Heber Wild Horse Herd. She was eventually released from the group. "The work group meetings were like sitting on a roller coaster and you can't get off. You just have to go the way the tracks go" (Mary Hauser, Heber Wild Horses Freedom Preservation Alliance; Singleton, 2019).

After interviewing Mary months later, she is of the mindset that she was released because she did not agree with the working group's recommendation. In her belief, she had valuable scientific documentation surrounding the origins of the herd and the importance of genetic diversity that the group chose to not utilize on the working group's web page. From that moment on Mary felt alienated. Furthermore, if her voice would not be heard, she would remain "as a cog in the wheel" to halt any further management of the horses. In this case: trust was broken due to the perception of a different interpretation of the science.

It also became obvious within the first three meetings that there was no interest in information sharing from the horse supporters. When I attempted to defend or make a point in support of the Heber Wild Horses it was ignored. Sometimes I would receive a follow-up phone call.... to 'correct' me and advise me on what I could, should or should not say during the meetings. Meanwhile it appeared others had freedom of speech.... I realized I was being forced out of my role as a contributor and into the role of a quiet observer of a well-orchestrated screenplay of a management plan for the Heber Wild Horse Territory. A plan which appeared to have already been devised and laid out prior to the first meeting of the Collaborative Group. (Mary Hauser quoted in Singleton, 2019)

Mary also lost faith in the USFS as she claimed,

the Forest Service personnel, had never even been out into the forest until a field trip with this group.... The BLM took the lead of this Collaborative Group even though these horses are not on BLM land. The BLM agent controlled the direction of how things were going to be carried out.... Through the years the Forest Service had failed to devise a plan to manage the Heber Wild Horse Territory so it's not surprising that they have passed their responsibility off to the BLM which has had years of experience stripping the American West of wild horses. (Mary Hauser quoted in Singleton, 2019)

As Davis and Colleagues (2018) reveal in "Making and Breaking Trust in Forest Collaborative Groups," across the collaborative working group cases they examined, a number of participants expressed general desire for balanced stakeholder representation, yet then offered specific stories demonstrating preference for an 'in group' with whom they could find trust and agreement (Davis, Cerveny, et al., 2018). In the Blue Mountain Forest Partners Working Group, one member described this as a "group of friends, you can talk a little more freely

amongst yourselves. They claimed that trust amongst their inner group had developed over years (Davis, Cervený, et al., 2018, p. 12). Perhaps Mary had not found her safe place.

Rights of Horses and Duty to the Landscape

Sociologist Jan Dizard duly notes that the battle over contested terrain, such as the controversy surrounding the management of the Heber Wild Horse Territory, is a struggle over a landscape onto which the contending parties have projected symbolic meanings that are diametrically opposed (Dizard, 1999). In the Heber case, as the Old West begrudgingly merges with the New, the essence of the Heber wild horse management dispute exposes sharply divergent images of nature. On the one hand, proponents of the New West (in this case animal rights and animal welfarists) view Nature as benign, self-healing, paradoxically ever changing and yet constantly in control. Everything in nature has a function and a place, including horses, which they support as native species as they evolved in North America. Furthermore, if humans would only remove themselves from, or at least drastically reduce, their demands on nature (through the elimination of livestock grazing for example), nature would achieve an equilibrium throughout its fundamental components. Many horse advocates spoke of the ability of horses to “self-regulate” their population numbers—without the interference of humans. If we surrender and let nature take its course, nature would take care and heal on its own. “If you know horses, you know that nature will manage the herd, and that the population will not increase dramatically” (Heber Wild Horse wild horse advocate).

As evidence for their belief, they site the National Research Council’s 2013 report on how to improve BLM’s management efforts through the use of science (NRC, 2013). The report highlighted that the practice of maintaining wild horse populations at or below carrying capacity through horse gathers induces ingress into

the population. This biocentric (mutualistic) view of nature vows that human tinkering with the ecosystem (and horses in particular) is inappropriate and, in many instances, harmful; the result of such meddling by humans could be damaging. Humans, in the minds of many horse advocates, need to be restrained in their efforts to control nature (the interference with the horses) for *Nature*, in all its wisdom, knows best how to heal itself from sporadic disruptions. "We are not skilled enough to make decisions on fertility – the animals make the best decisions on who lives and who dies" (Sussman [International Society for the Protection of Mustangs and Burros], personal interview, 2017). This stance is altered, however, if *humans* (i.e. ranchers in the view of horse advocates) were the cause of such disruption. In this case, we have the duty to provide proper welfare.

People do not recognize horses as a native animal that has a social structure. Horses do not function like livestock, and we need to determine whether herds are behaviorally functional. Maintaining structurally intact bands is important for overall herd health. (Sussman [International Society for the Protection of Mustangs and Burros], personal interview, 2017)

The opposing view, reflecting a more anthropocentric outlook (philosophy of Dominionism), describes nature in terms that are much less optimistic. Nature is NOT in harmony but in a constant state of disarray, and must be managed. We have the responsibility to ensure that the adjustments nature makes are compatible with *human* needs.

Everything is controlled – recreation, wildlife numbers, cattle numbers/grazing and nothing on the horses. There is not a good way to determine what animal ate what grasses, with the exception of the fact that horses typically stay in a place and graze a certain way. (Porter [rancher], personal interview, 2017)

These images of nature were not consciously recognized by the stakeholders and certainly were not what the parties explicitly debated or argued about. Still, the outcome for their desired management fell in line with such disparate philosophies. Most environmentalists/nature conservancy groups view our duties to nature through

an ecocentric lens and believe If humans would halt their efforts to control nature for their own purposes, (e.g., by eliminating cattle grazing altogether) they would consequently be saved from their own recklessness and greed.

While some wild horse advocates were in line with this thinking, (“letting nature be”) their views were altered if nature became too tough (see Chapter Three and the Salt River Wild Foal Rescue case). After extensive weeks of deliberation and efforts by “the Horse Task Group,” the Horse Advocates developed an adaptive management to include Emergency measures for wild Horse Welfare. This plan was comprised of many components, including: Feeding, (as there is no winter forage in the Territory) and watering, as it may be limited within the Territory (especially if grazing allotment trick tans are inaccessible or during a severe drought).

There is considerable irony in this view. If we have to manage and manipulate to keep something appearing wild, we are back to the question: “What does it mean to be wild?” Many of the horse advocate groups continue to dispute this fact and the amount of interference that is acceptable to manage wild horse herds (e.g. Salt River Management Group support fertility control through PZP while some Heber Wild Horse Advocates oppose it). At the same time, Wild Horse advocates are willing to accept supplemental feeding, hauling of water or population regulation if the alternative is poor welfare or the possibility that horses might go to slaughter.

Moving Forward

Develop Private-Public Partnerships

The Heber working group expressed a generalized concern for increased cooperation and communication with all stakeholders, including the White Mountain Apache Tribe. The indigenous view was not represented in the working group and yet it represents a valuable voice in the management of the horses that migrate between the FAIR and ASNFs. Economic opportunities might be realized in HWHT through

funding generated from horses, cattle and wildlife. The various 'economic value' for these ecosystem services should be considered as important to various stakeholders. To accomplish all goals, strong and diversified private-public partnerships would be encouraged. Specifics on who would do what within various volunteer efforts and partnerships (ranchers, horse advocates, etc.) would be essential. Members expressed a *deep* concern that lessons learned from discussions at the WG meetings would feed into the HWHT plan.

Challenges Noted

Continued concerns were expressed and the need for further discussion included the inability to define and implement the concept of "equitability" with regard to forage allocation. Information about the population dynamics of the horse herd – numbers, movements, and behavioral information – was also missing. In the opinion of the working group, it would be a crucial step forward to determine how this knowledge gap would be addressed and the resources and tools needed to gather this type of data now and into the future. Technology such as iNaturalist, (a social network for sharing biodiversity information from personal encounters) was suggested as well as activities such as a "BioBlitz " where groups of scientists, naturalists and volunteers conducted an intensive field study over a continuous time period, usually 24 hours.

Empathy and Equity for All

Overall, I was met with *extraordinary* cooperation as a participant observer in the Heber Working Group, and, in many instances, developed enduring friendships with participants who fell within the entire spectrum of care and concern for the environment and free-roaming horses. My only regret (which Jan Dizard, Professor emeritus of American Culture at Amherst College has similarly expressed) is that I could not find a way to resolve the differences between all stakeholders involved. As

I interviewed – and in some instances spent several days or even years with – each person in turn, I found myself drawn first to one side, and then the other, as much by the earnestness with which the views were held as by the rationality of the views themselves. Although I experienced this as a personal dilemma, Dizard notably reveals it is also our *collective* dilemma:

While everyone wants a better environment, there is no guarantee on what that environment should actually look like, much less on how to achieve it. As It might be easier, in fact, to generate the will and technology to restore and protect what remains of our natural heritage than it is to reach a consensus about what that heritage is. Those who would preside over this matter will have to become far more sensitive than they have been to the cultural and social dynamics involved in our interactions with nature. In the end, these human dimensions may be more important than technical virtuosity or scientific mastery. (Dizard, 1999; p. xviii)

Although it is impossible to unravel *all* underlying effects of the human relationships to nature and various perceptions on the use of rangeland and animal welfare science to achieve management outcomes for the Heber Wild Horses over a five-year timeframe, I have found that my results from the unearthing of archival documents, the dissemination of unstructured interviews, participation and observation of the Heber Wild Horse Collaborative group and Salt River Wild Horse Management Group, support the main thesis of my dissertation: knowledge of stakeholder values (aimed at wild horses), and narratives surrounding various interpretation of ecological science, provide valuable insight into stakeholder desired management approaches. Consultation with the USFS through a collaborative working group has the potential to add value to decisions made under the authority of the Wild Free-Roaming Horses and Burros Act and the Federal Land Policy Management Act. At the same time, if stakeholders are under the impression that their particular interpretation of ecological science or concern for animal welfare have been excluded, feelings of inequity and frustration emerge. If elements of Trust and inclusivity are not incorporated into the process, efforts to move forward diminish,

relationships are further damaged, and management efforts have the potential to be pushed farther towards litigation.

CHAPTER EIGHT

EPILOGUE: FINDING A HOME ON THE RANGE

We live in fragile worlds. Two are familiar. The first world is the outer habitat of land, air, water, and flesh, the one that supports biological needs of humans and other animals. The second world is our highly individualized and private inner life. Then there is a mysterious third world, the shared habitat of the heart. This is the deep connection between a person and another animal. It is the permeability of empathy. It is the connection that extends from within us, across the mysterious between, and into the other being. If we're lucky, we feel something almost indescribable in return. We can learn to enter this habitat at will. This transportive leap can change our lives and the lives around us for the better. (Louv, 2019, p. 24)

Figure 12

Murphree Observing Several Wild Horse Bands in Sand Wash Basin Herd Management Area (J. J. Murphree, 2018).



The swirling wind was kicking up dust in funnel shaped twisters that spun across the sagebrush steppes of the Sand Wash Basin as I traversed along the Seven-mile Ridge, cycling alone with only my cell phone to record whatever lay ahead. Huge thunderheads were beginning to roll in above the Vermillion Bluffs, brewing atop the Elk head Mountain range in northwest Colorado's Moffat County. Gazing east beyond Cedar Mountain, a series of ancient volcanic mountains rose, folded and craggily, turning from blue to purple under the darkening skies. The pungent smell of sagebrush scraping my tires was wonderfully familiar—once again sparking distant blissful memories of my childhood racing horses over the high plains of Oklahoma. As the scenery unfolded, I realized I was viewing one of those rare

fragments of America's Old West; a painted backdrop from an old western that had changed little since the Pleistocene era. While many might have viewed it as a sea of vast nothingness; a dry, harsh land unsuitable for any human economic need, I took it in as one of the most stunning landscapes I could imagine. I was drawn in by its splendor.

As an untested graduate student and novice wildlife biologist, I had had no solitary, close up encounters with wild horses before that very moment in June of 2017, when I embarked on this journey to the Sand Wash Basin Wild Horse Herd Management Area in the high ridges and mesas within the Yampa River Basin. My goal was to assess rangeland habitat and wild horse behavior as a result of the BLM and Forest Service's approach in the management of this particular herd. Roughly 155,000 acres of rarely visited BLM public lands lay before me. Just 30 miles to the south at the confluence of the Green and Yampa Rivers, Dinosaur National monument still houses the remnants of Brachiosaurus, the largest herbivore to roam the earth. On this day, however, I was on a mission to capture a glimpse of a more recent herbivore that wandered these lands during the last Ice Age. The unannounced midafternoon storm was quickly approaching, and I was a bit apprehensive about the likelihood of being caught unprepared in a downpour in such a desolate area. I was, after all, alone and the last sign of any human life was, to my knowledge, at least three hours away by bike. The silty soils along the bumpy trail would unquestionably render my return trip impassable – Even the slightest rainfall could create muddy, slippery conditions that could swiftly immobilize the best 4x4 vehicle. My somewhat narrow tires, together with my mediocre mountain biking skills left me skeptical about my decision to move on. I began to think about packing it all up – fearful of getting drenched and doubtful of even catching sight of the creatures I had traveled all these miles to see.

Just as I approached a high point on the plateau above a spring where wildlife were known to drink, something stirred on the ridge. As the wind picked up and the ominous clouds moved in, my fear turned to excitement. That's when I realized I was not alone. From literally all directions several bands of wild horses were moving in on me. I stopped pedaling, breathless with anticipation, frozen in the moment. Moving swiftly, the horses seemed oblivious of my presence. There must have been six or seven separate bands – nearly 50 horses coming together – This was June so there were at least a dozen frisky foals kicking up their heels or rolling in the dirt while their ever-vigilant mothers scolded them for wandering too far. The bachelor bands, full of energy, skirted around the mares, hoping to lure a willing female away; occasionally rearing up in protest to test their sparring capabilities – all the while avoiding the watchful eye of the more dominant stallion in command.

Such frenzy and wildness brought to mind a scene American adventurer and prototype western artist George Catlin captured in his 1834 painting "Wild Horses at Play" (a copy hangs in my office). Just two years after his infamous adventure visiting and painting the Native American tribes of the Missouri River and Northern Plains, Catlin got his first opportunity to replicate his journey hundreds of miles to the south, on the Southern plains of what is now western Oklahoma – very near to where my late 19th century ancestral homestead still stands. He was among the first artists of European descent to travel widely in the North, Midwest and West, spending eight years chronicling scenes of daily life among the 48 indigenous tribes he encountered. In 1844, with the intention of honoring and preserving Native culture in the face of growing oppression by the U.S. government and military, Catlin published a series of 25 hand-colored lithographs based on his sketches and paintings. Catlin's lamentation for the vanishing Native American culture is echoed in his concern for declining wildlife numbers and his fascination with wild horses, in

particular, as evidenced in his detailed description: “the wild horse of these regions is a small, but very powerful animal, with an exceedingly prominent eye sharp nose high nostril, small feet and delicate leg; and undoubtedly, have sprung from stock introduced by the Spaniards” (Flores, 2016, p. 64). In his view, no other animal on the prairies was:

so wild and so sagacious as the horse. So remarkably keen is their eye, that they will generally run at the sight, when they are a mile distant... and when in motion, will seldom stop short of three or four miles... Some were milk white, some jet black – others were sorrel, and bay, and cream colour – many were of an iron grey; and others pied, containing a variety of colours on the same animal. Their manes were very profuse and hanging in the wildest confusion over their necks and faces – and their long tails swept the ground. (Flores, 2016, p. 64)

Figure 13

George Catlin's painting Wild Horses at Play (Catlin, 1841). George Catlin Sketched this Scene on a Dragoon Expedition in 1834, and Probably Completed the Painting in his Studio Between 1835 and 1837.



Like many wild horse observers, Catlin was struck with the sheer beauty of the horse in its *wild* state, which somehow seemed magnified by the difficulty of possessing them. The American 21st century paradigm of the horse does not so much include a desire to possess the animal physically, as a desire to possess what the 1971 Wild Horse Act professes it symbolizes: the “spirit of the American West.” Hanging on to that spirit requires they remain wild, free from the over-interference of humans; where nature sets the rules on who will live, and who will die. And for that, they need wild lands to roam. Preserving those wild lands of the American West was a thought that was also near and dear to Catlin.

And what a splendid contemplation too, when one (who has traveled these realms, and can duly appreciate them) imagines them as they might in future be seen (by some great protecting policy of government) preserved in their pristine and wildness, in a magnificent park. (Catlin quoted in McNamara, 2019)

And what about those magnificent parks? Unfortunately, in this regard, wild horses shared the fate of Native American Tribes. For decades the National Park Service, committed to the idea of preserving American “nature” in the ostensibly enchanted form in which Europeans first saw it, dutifully eliminated “feral” horses from every national park where they were found, including Theodore Roosevelt National Park in North Dakota. Ironically, wild horses were deemed inappropriate in this former plains- badlands home where ancestral *Mesohippus* fossils have been unearthed, where the future president, Theodore Roosevelt, during his ranching days in the 1880s, watched them “as wild as pronghorns,” and more recently, where American actor and film producer Kevin Costner recorded them running wild in his 1990 Academy award winning epic western “Dances with Wolves” depicting the great Sioux horse culture of the plains and the passing of the American frontier. Because the Wild Free-Roaming Horses and Burros Act only applies to horses on US Forest Service and Bureau of Land Management lands, the horses in Theodore Roosevelt

National Park do not fall under its protection. Since it was a "historic" park, however, managers in 1970 began to recognize wild horses as part of the historical setting Roosevelt himself had witnessed in the area. Currently, a mustang population, that park officials maintain at between 70 and 100 animals, preserves the prehistoric historic relationship between wild equines and bison on this small piece of the plains. As duly noted by one of America's leading environmental and cultural historians, Dan Flores: "a Great Plains national park with wild horses is a grand thing, but without their predators, park managers have had to control both horse and bison populations at the park artificially – Not so great" (Flores, 2016, p. 87). Further south of Theodore Roosevelt National Park on the Southern Plains, the Wichita Mountains National Wildlife Refuge, has focused on a mission of reintroduction of wildlife "to ensure wildlife once native to the Wichita Mountains will always remain on the landscape." Managed by the U.S. Fish and Wildlife Service, this 159,000-acre utopia of rolling plains and granite mountains in southwestern Oklahoma is one of the oldest federal wildlife refuges in America. Recent reintroductions have included the river otter, burrowing owls and the prairie dog, which are now flourishing in four areas of the refuge. Three native ungulate herds have also been reintroduced to the area and dominate the Refuge, including American bison, Rocky Mountain elk and white-tailed deer. While neither "native" nor "wildlife," a herd of Texas longhorn cattle is also maintained to "preserve the cultural and historical legacy of this breed." The Longhorn and Bison are managed similarly to domestic livestock while hunting tags are accessible for the elk and deer. According to the Fish and Wildlife Service:

These four (native and non-native) species are the basis for the vegetative management on the refuge, as they are responsible for the vast majority of grazing and browsing. Each herd is evaluated to determine the number of animals which can be maintained by the refuge due to the limited availability of forage. (U.S. Fish & Wildlife, n.d.)

And yet, here in the precise Great Plains location where so much wild horse history played out – where George Catlin found himself so mesmerized by wild horses in the 1830s and even President Thomas Jefferson had marveled over as a “rare moment in the age of the world... when the horse could be studied in its wild state” (Flores, 2016, p. 67) – wild horses were not even on the agenda. Unfortunately, too many biologists and land managers still ignore the horse’s evolutionary and cultural history. Neither paleontology nor molecular genetics support the contention that horses evolved into their modern form from anywhere but in North America. Nonetheless, most state and federal land agencies continue to insist that horses, with 50 million years of evolutionary history in this country, are still “non-native.” There appears to be no rightful place for them among our National Forests, our National Parks and even our National Wildlife Refuges. In most cases, their only legal home remains in those areas where they were pushed by early mustanging efforts to areas like the Sand Wash Basin, where life is a struggle and where nothing much else exists. These were the leftover lands that no one wanted during those early homesteading days. And certainly, to survive you must possess the wildest of spirits.

Although I had hoped to linger longer amongst the wild horses of the Sand Wash Basin, a slight drizzle began, which prompted me to turn my bike around. And then, out of the mist, like a ghost from a surrealistic landscape, a sorrel stallion appeared; His unkempt mane, tousled in all directions – just as Catlin had described – revealed watchful eyes, set on a mission. His long, flaxen tail whipped about in the wind like a sentinel’s flag. Numerous scars from previous battles evidenced his status as a stallion to be reckoned with. His head and neck were bent down in the characteristic “snaking” position used when stallions are serious about moving their chosen mates to a particular destination. This was no domestic horse. I began to edge my way backward, then abruptly grasped the fact that I was being herded right

along with this stallion's harem of six or seven mares. Was there impending danger, perhaps some sort of predator in the area? Were they hightailing it because of the storm? Should I be afraid? Sidestepping a large boulder, and mindful of the deep ravine behind me, I continued to edge away from the approaching stallion. As he moved directly in front of me, I clenched the handles on my bike, hoping I could just blend into the surrounding sagebrush. My heart was pounding. And then it happened: the stallion paused. Remaining utterly preserved in the moment, he turned his head and looked in my direction. It was not just a glance; this stallion seemed to look right through me. I held his gaze – after what seemed like an eternity, he snorted, bobbed his head, then moved on. I, however, held my ground and continued to revel in the story unfolding around me – rain or no rain. The stallion obviously understood that I was no threat. Perhaps he too was just curious. And yet, it seemed like much more. Could he have *known* that I was afraid?

Figure 14

Chance Encounter with a Wild Stallion in the Sand Wash Basin Herd Management Area (J. J. Murphree, 2018).



I am certainly not alone in my feelings and inability to describe such wildlife encounters. Ken Balcomb, marine biologist and founder of the Center for whale Research Southern Resident Killer Whales (orcas) in North America's Pacific Northwest, has revealed that he often comes away from whale encounters with a real "Wow" feeling. As if he had seen something "above and beyond."

When you lock eyes with them, you get the sense that they're looking at *you*. It's a steady gaze. And you feel it. Much more powerful than a dog looking at you. A dog might want your attention. The whales, it's a different feeling. It's more like they're searching inside you. There's a personal relationship that they set up with eye contact. A lot transmits in a very brief time about the intent of both sides. In those looks I've felt – (*he hesitates to say this*) – appreciated. But of course, that's subjective. (Balcomb quoted in Safina, 2015, p. 351)

Journalist Richard Louv further explores the powerful and mysterious bonds we share with all living creatures, and how strengthening them can transform our mental, physical, and spiritual lives, serve as an antidote to the growing epidemic of human loneliness – as individuals and as a species – and help us tap into the empathy required to preserve life on Earth. In *Our Wild Calling* he writes: “when two creatures, one of them human, meet each other halfway across the abyss, both enter a world of potential (Louv, 2019, p. 27). Later he went on to say:

True connectedness is not a simple thing to describe; it can be a charged encounter, a web of relationships among friends and family or with other life-forms, an ongoing love- or, for some, coming in contact with a universal power or presence. At any age, it's possible to step momentarily into the world of another creature and then return to everyday life, changed or restored. (Louv, 2019, p. 31)

On the other hand, some have contended that the human gaze across that divide of human/non-human connectedness *disrupts* the world of the other non-human animal and somehow damages it. In some way then, we have spoiled nature with our “unnatural” presence. At the same time, as mutual inhabitants of Earth, should we not be seeking these encounters in order to understand the natural world that surrounds us and, in that endeavor, acquire a sense of empathy – much needed to preserve that wildness? In the words of renown author and highly acclaimed ecologist Carl Safina, we should not be seeking to understand how other animals are like us, but how they are like *themselves*.

While science has traditionally instructed researchers to make no judgment on the thoughts and feelings of animals, there was no doubt in my mind that this

stallion was a highly intelligent, social creature, who – with the risk of entering the realm of anthropomorphism I dare say – shared with me a care and concern for his family members. He was living autonomously, wild and free, in a way that we wish we all could. Somehow, I was no longer fearful or isolated within that barren landscape. I had unexplainedly become attached to the band's wildness – in an abstract way – not normally attainable in our everyday urban lives. It made all the difference in the world that I was alone with them in these untamed lands. Although I was infringing on his physical territory, the stallion's look confirmed, in my mind, a mutual empathy for one another; a shared spirituality or habitat (Louv, 2019).

Famed naturalist and environmental philosopher John Muir, father of America's national parks and founder of the Sierra Club, claims direct physical involvement with nature is essential in the transcendentalist's understanding of spirituality. "And into the forest I go, to lose my mind and find my soul." For Muir, Transcendentalism is an experience of otherworldliness given meaning by direct physical immersion in nature. Although I've pondered over his preaching in the past, the words did not have true meaning until I had actually experienced a similar isolated encounter with nature. Edward Abbey in his famous *Desert Solitaire*, irreverently as ever, addresses all people who would insultingly view Abbey's beloved Canyonlands National Park from the comfort of their car by stating "you've got to get out of the goddamned contraption and walk, better yet crawl, on hands and knees... When traces of blood begin to mark your trail you'll see something, maybe" (Abbey, 1968/1991).

I must admit, my understanding and appreciation of the wild horses' presence on the landscape had been altered in my mind during that encounter and I was transformed by a mysterious sort of "connectedness" to their journey in life. A sense of peacefulness, in that instant, had overcome me. While my interpretation of that

moment may have had no relation to what the stallion was actually thinking, feeling or sensing, this personal experience (or discovered truth?) allowed me to tap into something deeper within my subconscious that led to a profound concern for these magnificent creature's welfare and ultimately a desire to secure their proper home on the range, whether that be here on America's western rangelands or on my land in Oklahoma.

My training as a wildlife biologist in the early 2000s certainly never included spiritual matters of the heart when it came to wildlife management or ecosystem concerns. Surely, this was a topic better left to the transcendentalists of the mid-19th century or today's eco-spiritualists; it most definitely would never be something outwardly discussed at wildlife symposiums. Still, as I look back on my meeting with the stallion that day, I realize that I had been lacking something during my early years of wildlife management training and my efforts to understand the human connection to nature and the rightful place for wild horses on the North American landscape. I can't help but echo what many cognitive ethologists, who have found themselves in similar positions, proclaim in their efforts to describe such a personal encounter and connection with wild creatures: "what was that?"

As I move forward in my decision on whether or not I should assist the federal government in their efforts to translocate wild horses from BLM holding corrals to off range pastures, I once again reflect on my early experiences as a novel wildlife biologist entering the rapidly changing field of wildlife conservation biology less than a decade ago. At that time, I had never personally encountered bands of wild horses. I knew little of their social nature and much less about their core emotions. Likewise, I was unaware of the numerous interpretations of the construction of nature, including the role of equids on the landscape and conservation biologists' preferences towards either restoring or rewilding

ecosystems. My re-examination of the fate of America's wild mustangs has inevitably led me back to the original questions I pondered five years ago while gazing over the sections of shortgrass prairie in Oklahoma I would soon inherit: Who *are* the rightful prospective inhabitants of this land? If I rewild this rangeland with mustangs, would I be providing them with their *best* lives possible?

And so, I am thrown, once again, into the arms of the animal welfare-environmental ethics debate. Do the underlying values in this dispute prevent reconciliation in practice?

Australian ecologist, Ian Campbell (2018), makes a powerful case for incommensurability at the level of principle between the holistic value theory shared by major theoretical approaches to ecological ethics, and Tom Regan (1983/2004) and Peter Singer (1975), who share an individualistic theoretical approach to animal welfare ethics (Reed 2022). Such irreconcilable differences, however, assume *only* a binary choice between conservation of collectives versus protection of wildlife individuals – typically those species frequently targeted as threats to native species and ecosystems (Wallach et al., 2018). Laying out the foundations of conservation biology, ecologist Michael Soulé (1985) – inspired by Aldo Leopold – included his conviction that conservation should be engaged in the protection and integrity of natural processes, not the welfare of individual animals. Restoring our farmland to a close approximation of the ancient savanna conditions the indigenous Great Plains cultures inhabited over 10,000 years ago, however, would appear to be an impossible task. Historical human alteration of natural grassland ecosystems in North America and the continued reality of climate change and urban encroachment, leave private landowners and government agencies unable to provide appropriate habitat and adequate space for the policy- mandated “native” species that have co-evolved

in these areas. Furthermore, wildlife are now relying for their survival on transitional environments that are neither wild nor domestic (Reed 2022).

The process of developing agreed upon guidelines that merge animal welfare concerns and issues involving traditional conservation biology has been an arduous task. Despite mounting evidence attributing emotions and thoughts to animals, the mission and vision statements of prominent international conservation organizations have failed to promote animal welfare (Sekar & Shiller, 2020). At the same time, new disciplines like rewilding offer opportunities to reevaluate traditional distinctions between conservation biology and animal welfare science (Jepson & Blythe, 2020). Rewilding is becoming increasingly necessary due to rapid fragmentation of natural habitats and the risk of small subpopulations becoming extinct (Keulartz & Swart, 2012). In the case of the American mustang, rewilding has been sought after as an alternative to captive environments for equids or as a solution to reinstate the absence of megafauna and their unique role on the landscape (O'Neill, 2022; Wild Horse Fire Brigade, 2022). Because the re-wilded (or de-domesticated) animal must deal with the stress of adapting to an unfamiliar post-release environment, the success of the population depends on *individual* survival, settlement, and reproduction (Reed, 2022). Horses, like humans, have sentience, as well as the capacity for relationships. They are highly social beings with strong bonds within family bands. Stallions develop lifelong relationships to specific mares in ways that indicate strong emotions, rather than mere instincts to reproduce and survive (Reed, 2022). Land managers should promote opportunities for wild horses to act according to their unique needs.

I have only 1,400 acres of fenced -in rangeland. Transporting roughly 200 mustangs, gelding them and fencing them in does not provide a life that is truly wild and free. Furthermore, I cannot control the farmlands surrounding the acreage we

currently own. I can, however, be an advocate for one of the best, and possibly *only* viable, management tools to maintain biodiversity at large scales: the creation of ecological corridors. Such swaths of habitat or stepping stones of natural land, can enhance the ability of wildlife to move among larger habitat patches. (Gregory et al., 2021). Although recent guidance has been brought to light on how these corridors should be managed, such thinking has not traditionally been incorporated into wild horse management. Developing partnerships between government agencies, local ranchers, environmental groups and animal advocacy groups would be instrumental in these efforts (Sayre, 2005).

Because wild horses exist on the landscape in unique environments in the presence of humans, ecologist William Lynn also argues in favor of a deep understanding that is grounded in the context of each place. His place-sensitive approach balances ecological and welfare values by taking into account numerous situational factors, including geography and the capacity of local habitats to support sustainable populations of both native and introduced species (Lynn, 2019). According to philosopher Martha Nussbaum's (2017) capability approach, what matters to the welfare of animals is that they have opportunities to exercise their natural capabilities, not whether the environment itself is wild or natural (Keulartz & Swart, 2012).

While the horses of the Sand Wash Basin are isolated in the remote barren environment of Northwestern Colorado, those existing along the banks of the Salt River live their lives within a few miles of the Phoenix metropolitan area. Not only is the habitat vastly different in each of these eco-regions, the genetics and behavior of the wild horses who roam here are also unique. Wallach et al. (2018) argue that while many conservation scientists tend to affirm that there are only two choices: compassion for individual animals or conservation of collectives, many in the growing

discipline of compassionate conservation are now maintaining that it is possible to benefit both, by addressing the need for a mix of "specific care" for wildlife (such as that reserved for domestic animals) and "nonspecific care" directed at populations and ecosystems – including steps to reconstruct migration corridors disrupted by human development – that is appropriate to each situation (Nussbaum, 2006). Through adaptive management the care (e.g., supplemental feeding, water hauling, fertility control) may be altered within the same area based on habitat conditions, seasonal use, equid behavior, health, and population numbers. Maintaining a stable population is a major consideration in any confined area, but each management area will require a unique solution to balance ecological and welfare values the goal is to focus on opportunities for wild animals to exercise their basic capabilities (natural behaviors) to the extent possible in each type of mixed category environment.

Because virtually all habitats are subject to human encroachment, our response to the needs of America's wild mustangs should be wise intervention on a case-by-case basis in order to support thriving populations of all wild animals in less-than-natural conditions (Nussbaum, 2011). I share the hope of compassionate conservationists that we will soon approach a crossroad where scientific knowledge of wild horse behavior, fertility control and habitat use can merge ecocentric and biocentric concerns within unique herd management areas in order to promote solutions to the difficulties wildlife managers will face in the challenges of the twenty-first century.

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APPENDIX A

HUMAN CONSTRUCTED TERMS APPLIED TO FREE-ROAMING HORSES ON WESTERN
PUBLIC RANGELANDS HINDERS ABILITY TO REACH AGREEMENT ON MANAGEMENT
OF FREE-ROAMING HORSES

| Label | Conservation Biology/Academia | U.S. Policy (Agencies) | Stakeholder Group |
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| Wild | <p>Horses who have <i>not</i> descended from domestic stock" Gauntz et al, (2018) determined the formerly "wild" Przewalski horse descended from the first domesticated horse (the Botai).</p> <p>This recent DNA evidence proclaims: All Wild horses are extinct.</p> <p>Webster: living in a state of nature and not ordinarily tame or domesticated</p> | <p>"Wild Horse" is a legal term taken from the 1971 WFRHB Act which designates all horses found within Herd Management Areas or Wild horse territories as "wild and free-roaming horses" and that they "shall be protected (in the areas where they currently exist) from capture, branding, harassment or death..."</p> <p>Wild = free-roaming horses protected under WFRHB Act.</p> | <p>Horse Advocates: ownerless, free-roaming, and have lived without human support for generations.</p> <p>"Wild horses will never walk a fence and captive horses will, that is one way to tell a wild one"</p> <p>- Free-roaming horses = wild</p> <p>Ranchers: From the old west era—mustang=wild. Not tame-can not approach them</p> <p>"Wild horses have ancestors that have been on the land for eons"</p> <p>Sportsmen: change in experiencing wilderness: "gone from putting on your camo in the dark and hiking to remote areas to glass for Bighorn sheep to grabbing your picnic basket and sitting down to watch horses-no effort to do this!"</p> |
| Mustang | free-roaming horses with direct genetic lineages to the Spanish | free-roaming horses with direct genetic lineages | Horse Advocates Many advocates would |

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| | Barb horse brought here by the Spanish conquistadors in 1493 (Dobie, 1934) | to the Spanish Barb horse Mustang =Feral | use this term for all free-roaming horses Of Spanish decent Ranchers: Mustang = wild, Spanish decent |
| Feral | In a wild state , especially after escape from captivity or domestication; Having escaped from domestication and become wild (Webster) | Legal term: Horses that do not fall within HMA or wild horse territories or sanctuaries and that do not have a brand. Feral = "Unauthorized livestock" managed under AZDA estray laws | Horse advocates- feral= negative term applied to companion animals that are roaming wild. |
| | | | Environmental Groups "Wild horses are feral , non-native animals that are uncontrolled ungulates" |
| | | | Ranchers Escaped domesticated horses untrained, undomesticated, unused to humans, unbroken, might be dangerous |
| Native (verses non-native or Exotic) | Horses evolved in North America in present day Wyoming over 55 million yrs ago and were extirpated from North America 8-10,000 years ago along with 15 other charismatic, megafauna species, due to climate change or hunting by the clovis culture. All horses on western ranges today are descendants from European horses reintroduced in 1493.- | "Leopold Report" - Native species are those considered to exist in North America when Europeans set foot on this continent . A native species is one that is found in a certain ecosystem due to natural processes, such as natural distribution and evolution. No human | Horse advocates Living where they were born a person born in a specified place or associated with a place by birth, whether subsequently resident there or not. |

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| | <p>the two key elements for defining an animal as a native species are where it originated and whether or not it coevolved with its habitat. E. caballus can lay claim to doing both in North America. So a good argument can be made that it, too, should enjoy protection as a form of native wildlife. (Kirkpatrick and Fazio 2008)</p> <p>Free-roaming horses = reintroduced indigenous species (Donlan)</p> | <p>intervention brought a native species to the area or influenced its spread to that area. Native species are also called indigenous species.</p> <p>Free-roaming horses are considered non-native.</p> | <p>consider free-roaming horses native</p> <hr/> <p>Ranchers Free-roaming horses are considered non-native Term that applies to wildlife not domestic animals</p> |
| Invasive | <p>A nonnative organism: growing and dispersing easily to the detriment of native species and ecosystems</p> <p>Free-roaming horses= science literature is mixed on this</p> | <p>An invasive species is a species that is not native to a specific location (an introduced species), and that has a tendency to spread to a degree believed to cause damage to the environment, human economy or human health. Goal is to decrease invasive species – Free-roaming horses are considered invasive.</p> | <p>Horse advocates: free-roaming horses are NOT invasive and science literature is biased.</p> <hr/> <p>Ranchers Relating to, or characterized by military aggression, a pest, weeds that don't belong</p> |
| Domesticated | <p>to tame (an animal), especially by <i>generations of breeding</i>, to live in close association with human beings as a pet or work animal and usually creating a</p> | <p>companion animals or livestock fall under the care of USDA</p> <p>Because domestic horses are</p> | <p>Horse advocates (of an animal) tame and kept as a pet or on a farm.</p> <p>"A domesticated animal are not as</p> |

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| | <p>dependency so that the animal loses its ability to live in the wild. Any animal that has undergone a change at the genetic level due to selective breeding to better suit a human interest.</p> | <p>considered livestock, free-roaming horses are also "livestock" and are "unauthorized" if they do not have a brand.</p> | <p>quick and smart as a wild animal – wildness is about how manageable they are, their behavior. "</p> <p>Horse advocates – free-roaming horses are NOT domestic.</p> <p>Ranchers</p> <p>"The more you treat them like domestic animals the more they aren't wild animals"</p> |
| <p>De-Domesticated</p> | <p>the transformation, undertaken over generations, of domestic animals into self-sustainable wild or semi-wild animals (Vera 2009)</p> <p>In more recent human induced rewilding efforts (such as the rewilding of Konik ponies and Heck cattle in Oostvaardersplassen nature reserve in Holland in 1984), de-domestication can be viewed as an end in itself: as a sort of species restoration, a way of getting populations of animals to resemble their wild ancestors not only in appearance but also in terms of behavior. But it is most often advocated as means to an end: as part of a complex process of ecological restoration aiming to increase the</p> | | <p>Horse advocates in the case of the Salt River Wild Horses, this process has generally been ongoing for over 400 years, without the <i>direct</i> aide of humans.</p> <p>Ranchers unfamiliar with the term- cattle can go wild – cattle need to be familiar with a pasture to know where to graze</p> |

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| | so-called wildness and naturalness of an area in a long-term nature management strategy | | |
| Tame | Google: to convert (animals, plants, etc.) to domestic uses; tame. | Branded or licensed by owner (livestock and companion animals Free-roaming horses (if approachable) are tame, therefore not Wild. Tame = feral | Horse advocates (of an animal) not dangerous or frightened of people; domesticated- Horse advocates – free-roaming horses can be tame, but living wild |
| | | | Ranchers No wild horse is tame- tame horses you can go up to and feed- |

APPENDIX B

HEBER WILD HORSE TERRITORY WORKING GROUP – KEY THEMES AND DESIRED
MANAGEMENT

| Issues | Stakeholder Group | Narrative- Desired Management |
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| <p>Horse Population:</p> <p>Origin Estimate of current population Desired population Reason for desired population level</p> | <p>Wildlife Representatives Range Scientists</p> | <ul style="list-style-type: none"> • Origin: Feral/non-native horses/un-authorized livestock- moved in from Fort Apache Indian Reservation after Rodeo-Chediski Fire. • 300- to several thousand horses roaming area • Desired level: 8-70 • Multiple Use Mandate for HWHT • Concern for forage Availability and degradation of environment • |

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| <p>Horse Population:</p> <p>Origin Estimate of current population Desired population Reason for desired population level</p> | <p>Ranchers</p> | <ul style="list-style-type: none"> • Origin: Feral/non-native horses/un-authorized livestock- moved in from Fort Apache Indian Reservation after Rodeo-Chediski Fire. • 300- to several thousand horses roaming area • Desired level: 8-70 • Multiple Use Mandate for HWHT • Concern for forage Availability and degradation of environment • "As a young man, there was a study done for 7 wild horses (buckskin stud, albino mare, black mare, sorrel mare and 3 colts/mares/fillies) and there is a sanctuary for those. In 1966/67 - a huge snow that killed the mares, sterilized the stud and the colts that were left never multiplied and they all died off. It was set up for 7 horses (belong to Uncle Arnold, branded H4 on all of them), not sure why it needs to be extended out to ALL horses" • "Porters and Shellys settled here and ran horses like I run cattle, ship the best ones back east for riding and pulling carriages, they would bring back studs and breed them with their mares..." • "Most of the horses are shorter and look different than mine, they came from the Indian reservation, and they are breeding more and more amongst the generations." |

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| <p>Horse Population</p> <p>Multiple Use: Forage Allocation</p> | | <ul style="list-style-type: none"> • "As a 5th generation rancher in Show-Low.... Know what I've seen from when I was a kid until now – there has always been (when I was 10-12 yrs. old) horses every once in a while, a small band 1 stud and 4-5 mares, but it was a rare treat. And today, it's not if you are going to see them, it is how many you are going to see. Gentry Lookout used to be the place to see them, now it is from Show low up to the Rim almost to Payson, you have a chance to see them. Now you can see them on the north side of 260, never a thought of seeing them before. Just a lot more horses now. |
| | Sportsmen | <ul style="list-style-type: none"> • "After Rodeo-Chediski fire new growth was like candy and brought in tons of ungulates....Mule deer population exploded however so more tags were issued. That's when the horses appeared. Wildlife controlled by hunting permits, cattle by grazing permits...horses not controlled. All you see is horse poop....not much of any other species droppings." • "Disney and tv shows about wild mustangs makes people love horses, I don't have any objection to horses, but I do have a problem with the mis-labeling of these as descendants of Spanish mustangs. They don't do a lot for the habitat, more destruction. Impact on habitat for native wildlife is being impacted by the excess amount of horses (esp. after the R-C fire). This (wild horse and burros act) has cost the country millions of dollars. There is the thought that they are beautiful and need to be on the landscape>" |
| | Environmental Groups: Center For Biological Diversity) (not selected for | <ul style="list-style-type: none"> • "I have spent a great deal of time with horse advocates, and know that there are no natural predators. The management numbers are excessive in these areas – on the Salt, the horses are starving, and from my personal observations, the horses inhabit areas |

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| <p>Multiple Use: Forage Allocation</p> | <p>Collaborative Working Group)</p> | <p>with water because there is not enough forage. They eat mesquite beans because there is nothing else to eat. "</p> <ul style="list-style-type: none"> • "Wild horses are feral, non-native animals that are uncontrolled ungulates. Their lack of control leads to habitat damage. There is a contingency of folks that advocates for horses, and without them, the horses would probably be managed differently." <p>"Elk populations have gone down quite a bit since the fires, but that is the result of AZGFD management (not a result of increasing horse population). AZGFD had 1600 permits in unit 3C after the fire to get the elk numbers down and manage more for deer (that's what their publications say). I do not see a correlation between the decreasing elk populations and increasing horse populations"</p> |
| | <p>Horse advocates</p> | <ul style="list-style-type: none"> ▪ Wild Horses- descendants of Spanish Conquistador horses, part of natural environment ▪ Roughly 300 (do not trust population numbers assessed by USFS) ▪ Desired Level : At least 200 ▪ Maintain Genetic Viability, Territory should be exclusive for Horses and not cattle, Territory should be redrawn for areas ▪ "we have proved that the horses had always been there and that they didn't all come from the White Mountain Apache reservation after the fire." ▪ "The Cerbat Wild Horse population (near Kingman AZ) is controlling itself and there is no overlap with grazing due to mountain lion populations" ▪ "They are not given the same consideration as other wild species, they are seen as a nuisance animal. Emotional attachment to wild horses – can't hunt them, etc. and this has to be considered when determining how to manage them" ▪ "Numbers fluctuate, there may be no horses in the territory one day and then 10-15 the next, if it isn't fenced |

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| | | <p>then the expectation of horses staying there is silly.”</p> <ul style="list-style-type: none"> ▪ • |
| | Ranchers | <ul style="list-style-type: none"> ▪ Misconception that ranchers don't want any horses on the landscape, however some from the ranching community stated a willingness to manage horses ▪ Horses are dominant at resources such as water (chasing off cattle and wildlife), which are often managed by permittees ▪ Lack of fairness that cattle use is monitored, and policy/agency management responds to monitoring data (pasture rotation, changing stocking rates, etc.). ▪ Frustration that horse impacts are not measured and there are not changes in horse management in a response to impacts ▪ revision of permitted grazing, to include allotments (and forage allocation) for both horses and cattle. ▪ 4th generation ranchers know the land and horses- should be allowed to push horses to desired pastures ▪ Some expressed concerns that horses need to be contained ▪ "Everything on the FS is monitored, our cows are monitored, on our contract we leave 25% of our grass. We are required to move if the FS feels like we have overgrazed. Every time we move from a pasture, I go out with someone from FS to count the grass. By the time we move into the pasture where the horses are we could be at 15% and our 60 head of cattle (5 months, starting in June) can't move in there, the horses stay in there all year. Everything is controlled – recreation, wildlife numbers, cattle numbers/grazing and nothing on the horses. There is not a good way to determine what animal ate what grasses, with the exception of the fact that horses typically stay in a place and graze a certain way. That data isn't taken into account, it only is |

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| | | <p>recorded that the area is overgrazed and the rancher is at fault”</p> <ul style="list-style-type: none"> ▪ “If you are going to have a territory with horses, then there shouldn’t be camping or hunting. There has to be management” ▪ “They need to be monitored like they do cattle - allotting the same amount of forage for horses as they do cows, ground work is already there – what looks good for cows is good for horses. All factors taken into consideration: recreation, elk/wildlife, logging, etc. ...It was determined that 7 could live in the territory. Why would the horse people allow ALL the horses and ruin it for campers and hikers and future generations to enjoy the forest?” ▪ “Come up with a sustainable number with some winter are for them, the territory is mostly on the Porter allotment, which is a great summer area, during the winter, even mild, the horses would need to go to a lower area to feed...” ▪ “I’m an advocate for the <i>users</i> of the land. Not pro-horse for having something to look at... I want them to function in the area.. The territory can’t be just for horses, there are other things that should be going on there.” ▪ “Horses have 2 sets of teeth –(whereas cattle have no upper incisors) horses can clip grass really close - so this makes them more destructive.” |
| <p>Multiple Use: Forage Allocation</p> | <p>Sportsmen / Wildlife Representatives</p> | <ul style="list-style-type: none"> ▪ due to native species diversity and important riparian areas, grazing was not a suitable land management practice on all areas of the landscape. ▪ concerned about direct competition between native wildlife species (deer, pronghorn and elk) with horses, ▪ Concern for decrease in Deer and elk tags ▪ " Horses will dominate at a waterhole. I've seen them chase off other wildlife. They eat grasses down to the nubs...stay in one area until it's destroyed then move on...They are monsters on the landscape...same |

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| <p>Multiple Use: Forage Allocation</p> <p>Desired Habitat and Impacts</p> | | <p>thing with the Bison up on the rim. The Forest Service takes forever to get anything done."</p> |
| | Horse advocates | <ul style="list-style-type: none"> ▪ Misconception that horse advocates do not want horses managed or controlled in any way. Several interviewees expressed a willingness to discuss effective management and control ▪ Management should allow for horses to use Territory and have access to water at all times by leaving pasture gates open. ▪ Horses are NOT dominate at Water holes (Black Canyon lake or Trick Tanks) ▪ Desire an emergency plan to haul water when needed ▪ Cattle have a legal allocation of forage, and permitted grazing allotments, whereas horses do not, as described by the Wild Horse and Burro Act. ▪ "Primary issues are the inequality - cattle on nearly all BLM land where horses only have finite areas ▪ "I have never seen a skinny animal up there; there is enough forage for all the wildlife, horses and cattle." ▪ "Horses don't overgraze, they move quickly from area to area and reseed areas too." ▪ "if they are going to restrict the horses to the territory, there is plenty of cattle grazing around the territory, no need to have livestock in the territory". ▪ "In 2015 there were cattle in and around Black Canyon Lake - the smell was so bad/horrific. No desire to go back, very polluted - not multiple use in that case." <p>"Total revision of permittee grazing allotments, and perhaps a total revision of all regulations of forest uses. The use of the forest has changed a lot over even the past 10 years, with ATV's, etc. They call this a horse territory, yet the area is fenced for grazing allotments"</p> |
| | Ranchers Sportsmen / Wildlife | <p>Current habitat conditions are supporting healthy animals (horses, deer, elk, etc.). However, many stated that this is a</p> |

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| | <p>Representatives Range Scientists</p> | <p>delicate balance because conditions can change quickly on the landscape, due to factors such as annual precipitation or fire.</p> <p>More information about forage resources in the area would be useful, e.g., forage availability, status, vigor, health, use/utilization</p> <p>climate change is not agreed upon or being addressed, which could have impacts on habitat and range conditions over time</p> <p>forage availability and habitat impacts are the main challenges to managing horses in the HWHT.</p> <p>Concern for direct impact of horses on habitat (primarily due to perceived overgrazing and hoof compaction).</p> <ul style="list-style-type: none"> ▪ "I was on the territory last week to do research in the area... I did not see any ecological or animal welfare issues. If there were any, those would be the ones to solve first. No decimated landscapes or animal welfare issues." |
| <p>Desired Habitat and Impacts</p> <p>Science and Management</p> | <p>Sportsmen / Wildlife Representatives</p> | <p>Impacts from overgrazing (attributed to horses) and included impacts to Mexican spotted owl and northern goshawk prey base due to reduction in understory vegetation</p> |
| | <p>Ranchers</p> | <p>Frustrated that money is allocated for habitat improvement for managed species (wildlife and cattle), however "non-permitted" animals(horses) are also benefitting</p> <p>More information about forage resources in the area would be useful, e.g., forage availability, status, vigor, health, use/utilization</p> <p>"Right now it is going downhill, if you go out where the horse are for the winter there are very few grasses and shrubs. The pasture I am going into a pasture with the horses, usually I have 5-6 weeks and</p> |

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| Science and Management | | now my plan is only 3-4 weeks, after 3 I have to go out with the FS and determine if I have to leave. The most damage is around permanent waters, we have 3 trick tanks – 20,000 gallon tanks that collect water and then run out to drinkers, the water will be gone as the horses use them all year long.” |
| | Horse Advocates | <p>concern that there is no winter range/forage within the existing Territory, and this requires horses to move across the landscape (out of the Territory)</p> <p>natural predation on the landscape would help with herd management.</p> <p>A few mentioned that letting nature take its course (for the increase and decrease of band/herd size) would be considered successful management.</p> |
| | Sportsmen / Wildlife Representatives Range Scientists Sportsmen / Wildlife Representatives | <ul style="list-style-type: none"> • Monitor and acquire more information surrounding habitat conditions and resources in the area <ul style="list-style-type: none"> ○ Forage availability, status, vigor, use/utilization, native plant populations, ○ Natural water sources status/impacts ○ Soil health ○ Erosion ○ Recreation ○ Wildlife (elk and deer) populations ○ Logging • Concern over the border (FAIR-ASNFs) fence and recommended clearing damaged trees close to the fence line • Some felt that a Territory fence would minimize impact on habitat and resources across the landscape • Create an adaptive management plan that takes into consideration <ul style="list-style-type: none"> ○ climate change, fire, and past experiences ○ Ability to cull horses when necessary • more information on other species on the landscape (especially threatened or |

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| Science and Management | | <p>endangered) species and game species that are managed in the area.</p> <ul style="list-style-type: none">• use of credible science/data in decision making <p>“Can’t use traditional management tools (hunting, collection for sale/food), adoption pathway is viable but becoming more difficult. How do you make these animals special/unique so that people would take on the surplus (non-profit entity to take some of the load off of the FS) – like ex-racehorses, greyhounds, etc. If they were wild I could shoot one, but with their status they are essentially making them pets.”</p> |
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| <p>Science and Management</p> | | |
| <p>Science and Management</p> | <p>Sportsmen</p> | <p>We are repugnant about eating horses, but other countries eat it regularly – it is better for you than beef. My family is from Hungary where horse is a delicacy. (I’m interested in trying horse meat). Most zoos feed horse meat to big cats, it is imported.”</p> <p>-” they care only about their pet horses that they have names for ...don't get me wrong, I like horses too and know about their power and strength and unpredictable behavior.... Horse advocates are uneducated and do not understand effect on ecosystem. They only value ONE species”</p> <ul style="list-style-type: none"> • “The horse lovers want to keep them on the landscape with no injury or slaughter, the adoption aspect is not realistic. We pay to keep them alive. If there was a market other than adoption we may be able to manage them.” • “Area should be fenced and horses confined so that they aren’t destroying habitat.” |
| <p>Science and Management</p> | <p>AZ Game and Fish Veterinarian</p> | <p>“Sterilization techniques (re: humane-ness) – “there is going to be some kind of stress, need to manage pain in a quick and effective way. I do not recommend spaying for mares. Pocein Zona Pallucida (PZP) vaccine, keeps them from cycling for a year – special training needed, may be the most effective, can be delivered via dart. Males: physical or chemical castration, either way they need to be sedated. With a vasectomy the horses don’t know that they can’t breed. Fort Irwin, CA is where we did this work with</p> |

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| Science and Management | | <p>burros, not sure what the herd did after the treatments. Ultimately manage stress to try to be humane. Sterilization is still a large topic of research. Any time there has been management of wild/feral horses we are messing with them and their family structure (capturing, moving, etc)."</p> <ul style="list-style-type: none"> • "There is a market for a wild horse that's been tamed – BLM had a high return rate on the adoption with a wild animal in a corral in your backyard. Slaughter in the U.S. now instead of shipping them to Mexico which was inhumane. Result is now to take BLM horses and burros and they are in Florence, good inmates work with the horses. BLM will buy it back for \$750 if they are broke (halter trained, etc.), saddle broke then they will be bought back for \$1000. AZ has the largest holding facility and it can hold 3000 animals, not yet filled. Haven't heard anything about the local Horse groups views on humane-ness of the facility in Florence. Contact: Randy, employed by Dept. Of Corrections, head trainer in Florence they might take horses from the FS lands, but currently just off BLM lands from the round ups." • "Work with population dynamics/herd health, not just one horse at a time." |
| | Ranchers | <p>information/analysis needs to be transparent, rigorous and scientifically sound</p> <p>"Need to make sure the horse herd maintained sustainably, moved around, provide for care (we can't just look at them, they need to be cared for) and fitness of the horses, salt and feed if needed"</p> <p>"Federal injunction has the Forest Service with NO options of moving them, maintaining them – is that taking care of the national forest for future generations? ...That is what I am trying to do."</p> <p>"FS flew the survey to count horses, when I had to go over my contract and show my</p> |

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| <p>Science and Management</p> <p>Economics</p> | <p>Ranchers</p> | <p>plan! There has to be a number for the horses too. If I can only have 60 head of cattle on 17,000 ac for five months, how can 19,700 handle hundreds of horses year round?"</p> <p>"The primary issues for management will be competition with elk and livestock that are permitted for that area. Trail riding and ranchers gathering cows there will be conflicts with a band with a stud, if they are aggressive it is dangerous. Especially with the numbers that are out there now, there is bound to be conflicts with the wild studs."</p> <p>"The primary concern will be having feed for them, and to come to an understanding with the people that are in favor of letting them take over with no management. That is a problem we have been dealing with. There is not a lot of common sense with protecting these animals: who is going to pay for it and the impact on viable resources that make other people their livelihood – timber, livestock, recreation – a lot of people with interest not just horse advocates."</p> <p>"How could we meet the sustainable number? Achieved by taking out the colts after a certain time, rotating studs out to reduce inbreeding and limit overpopulation. Manage through sterilization, for a small/sustainable number."</p> <p>".....easiest way would be to eliminate/keep a limited number of studs. My ideal would be 1 stud and maybe 7 mares, once a stud colt starts to reach breeding age they would be taken out of the herd...done through water or salt traps to separate them out. Like managing any livestock operation"</p> <p>"Big conflicts with the reservation, the reservation has way more horses that the Sitgreaves does now. Conflict with fence maintenance – this will be going on forever as far as I can see."</p> |
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| | | <p>“ The best thing to do with those 300 horses would be able to have White Mountain Apache Tribe claim those horses (pick them up, sell them, break them, or whatever and do whatever they wanted to do with them, with less public outcry.”</p> <p>“We have gotten to the point where the horses are damaging the landscape, and at this point, it affects the horses’ health.”</p> <p>•</p> |
| | <p>Environmental Groups</p> <p>Sierra Club (Not selected for Working Group)</p> <p>Center For Biological Diversity</p> | <p>“Healthy waters and riparian areas (and associated plant communities), healthy meadows with healthy populations of other wildlife, healthy predator populations (mountain lions will take down wild horses), with full elimination of cattle right off the bat.”</p> <p>“The horse advocates are very smart people, but they do not accept management methods for horses that they would accept for other species like cowbirds.”</p> <p>“Ideal treatment would be to treat them as exotic animals and shoot them, but this is not societally acceptable...f horses cannot be killed, then you have to lower the excessive numbers of ungulates. We all own the animals – not just the horse lovers.”</p> <p>“In areas where there are threatened and endangered species, there are laws that permit removal of horses”</p> <p>“We need science-based discourse in our society, and young people are the future of sustainability.”</p> |
| | <p>Sportsmen</p> | <p>“Numbers have to be decreased - Maybe horse hotels? Zoos are currently importing horse meat (better for them than beef). Wish White Mtn. Apache tribe would just say: ‘Can we have our horses back?’ ”</p> |

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| | <p>Indigenous Voice25% Apache – his brother is half Apache (did not end up staying in the Working Group)</p> | <p>“Catch the wild horses, if you catch them the right way in 3-4 days we can sell trained horses”</p> <p>“Horse advocates think are helping out by leaving them out on the landscape, a white way of thinking...”</p> <p>tribes are really cautious to get involved with any of the states’ issues and agencies</p> <p>“Tackle this by reducing the number of studs. Giving birth control can create birth defects, and their bodies are different and the birth control doesn’t always work right”</p> <p>“Studs run in groups, bait corrals with a mare and then remove those horses (males) from the Forest or geld them – the most effective way – you only want certain ones breeding – treat them like cattle”</p> <p>“The entire population needs to decrease, there are some turn-outs there on the forest too. Can figure out where they travel, this would help in corralling them, baiting them, etc.”</p> <p>“The fence can be repaired but with the wind the dead/burned fall and take out areas of the fence. It needs to be cleared back so that no dead tree can take out a fence. Need constant upkeep, need to be ridden every 3-4 days. Horses are smart and will walk a fence until it finds a hole and gets out that way”</p> <p>“Training facilities in Florence area and mustang savior in California are valuable.. I would like to do this in Heber....Trained horses go for \$800-\$1000 per horse on craigslist ”</p> |
| | | <p>Monitor and acquire more information surrounding habitat use and behavior of horses including</p> <p>Interactions and competition with native wildlife and cattle</p> <p>Movements across the landscape</p> |

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| | <p>Horse Advocates</p> | <p>Dietary preferences and grazing behavior Social structure of bands Management effects on reproduction</p> <p>Genetics of the horses on the landscape needs to be analyzed for indications of Spanish descent or connections to the White Mountain Apache herd.</p> <p>Determinations of descent are important in maintaining a "wild" status and future management.</p> <p>Need for more research on birth control/sterilization methods. Some respondents also mentioned concern about the long-term effects and effectiveness of birth control (PZP) in addition to the cost and acceptability of its use.</p> <p>Territory Monitoring Zone: Adjust Territory boundaries to include better habitat for seasonality</p> <p>Adaptive management to include Emergency plan for wild Horse Welfare. This could be comprised of many components, including: Feeding, as there is no winter forage in the Territory, Watering, as it may be limited within the Territory information/analysis needs to be transparent, rigorous and scientifically sound</p> <p>'Craig Downer (author, lives in OR) – active in saving the wild horses, conducted land and management studies/research (wild horse conspiracy - book)</p> <p>"...Innovative solution for FS in holding for horses to be managed by private land owners. Dude ranches could do this here in AZ, take a band off the landscape and relocate it without being too disruptive."</p> <p>' "People do not recognize horses as a native animal that has a social structure. Horses do not function like livestock, and we need to determine whether herds are</p> |
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| | | <p>behaviorally functional. Maintaining structurally intact bands is important for overall herd health, and agencies do not manage herds without interference [that disrupts natural social structure]. When horses are not disrupted by management activities, the birth rate is not very high. Destroying family bands through management interference discourages baseline healthy behaviors; many mares are becoming pregnant at 2 years old instead of the traditional 4 years old. When BLM does gathers, they separate the stallions from the mares, and turns the stallions back out on public lands. The stallions are broken from their bands, are left alone, and go after mares at a young age, mating early. Juvenile stallions are not as prepared to mate as mature males."</p> <p>"we are not skilled enough to make decisions on fertility (the animals make the best decisions on who lives and who dies). We don't know who is the most and least dominant. I (Karen Sussman) have used PCP on two herds. PCP causes permanent infertility ---90% of horses are infertile within 4 years of using PCP. PCP is not reversible."</p> <p>"if you know horses, you know that nature will manage the herd, and that the population will not increase dramatically."</p> |
| | <p>Ranchers Sportsmen / Wildlife Representatives Range Scientists</p> | <p>Many respondents noted that the USFS doesn't have adequate funding to carry out broad birth control efforts.</p> <p>A few respondents noted the challenge of finding funding to maintain horse herd management and infrastructure, such as feeding and salt, fixing fences, and hauling water.</p> <p>A few interviewees mentioned the costs to local communities in terms of lost revenues from cattle ranching, reduced recreation, and reduced timber sales.</p> |

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| Economics | Horse Advocates | Wild horses draw in Tourists to the Bison Ranch Area Consider regionally unique marketing techniques for promoting tourism and adoption |
| | Sportsmen / Wildlife Representatives Range Scientists | <ul style="list-style-type: none"> ▪ Relationships between horse advocates, ranchers and USFS personnel ▪ Concern for USFS staff turnover ▪ Concern for threat of injunctions and lawsuits, and political pressure, locally and statewide, presents challenges to managing the horse Territory. ▪ Concern that input into the proposed plan will not be implemented by USFS |
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| Trust | Range Scientist (BLM) | "Horse advocates challenge us on the science methodology, particularly population numbers." |
| | Ranchers | ▪ horse advocates all want to do away with cattle....do not want |

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| <p>Trust</p> | | <p>horses managed or controlled in any way</p> <ul style="list-style-type: none"> ▪ Concern that input into the proposed plan will not be implemented by USFS ▪ "Up until last year, I didn't have a problem with horses, but now with some gates being left open there are a few horses (9, he has seen in one pasture, some say 30 horses) on the allotment now" ▪ "The ranchers will be the first to go if there is something to be removed because of over grazing. The only counts that happen are when the cattle leave a pasture, there are no counts before the cattle are moved in. With 60 head of cattle (before the horses were on), we were eating, on average, 8-10% on any given year on any given pasture. Are there changes that happen because of horses, only the FS would know...." ▪ "People get mad at us ranchers. The fence is down, people cut it and we have to repair it on our allotments (not just horse people cutting fences)." ▪ "People feel that the ranchers have no place on the forest – 4-wheeler people and horse people, it puts us in between them and the forest office. We are doing what we have to fulfill our contract." ▪ "Does it matter what we do, if the people way up high won't enforce the law? Ex: the travel management rule – 4 wheelers going off road with no enforcement.... Are the horses in a territory going to be maintained and fences taken care of and what about when there is harsh weather/big snows?" |
| <p>Trust</p> | | <ul style="list-style-type: none"> ▪ "Die hard horse lovers want to see them all over the woods!" ▪ "I don't want to sit through this interview, then have to sit through lots of meetings, only to be screwed by the Forest Service. I'll do the interview, but if I am to participate in that deal, we will push the Forest Service to take those recommendations and not waste our time on these issues that are |

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| <p>Trust</p> <p>Successful Collaboration</p> | | <p>highly emotional and highly political.” (AZ Cattleman’s Association)</p> <ul style="list-style-type: none"> ▪ “My personal opinion: until the Forest Service grows a back bone they won’t admit that horses need to be removed. Everyone I know and talk to agrees and are dead set against the horses being in the forest ▪ “People accuse me of being a horse hater - the last thing I am going to do is hate a hose. I earn my living on the back of a horse” |
| | <p>Indigenous Voice-25% Apache – his brother is half Apache (did not end up staying in the Working Group)</p> | <ul style="list-style-type: none"> ▪ “People are going to believe the science/data/analysis that supports what they already believe....especially people in the city that have no idea what it takes to be a rancher, or work with horses...” ▪ At the Bison Ranch meeting the horse advocates talk about the issues... if this group could spend some time in the area and see how many horses are out there and the impacts on the land, then have the meetings about what will be done, not rounded up with helicopters – but they are trained on the spot and it could be filmed and have each person on the working group see it and experience it first hand – and then with more trust then the group can build fences/waters/taking out dead trees. ▪ Most of all show that this process will not be like the BLM. Let all the groups involved have a part in training and deciding where it goes (horse advocates) – necessary for the greater good for the animals ▪ |
| | <p>Horse Advocates</p> | <ul style="list-style-type: none"> ▪ Do not trust population numbers assessed by USFS) ▪ Concern for Relationships between horse advocates, ranchers and USFS personnel ▪ Concern for USFS staff turnover ▪ Concern that input into the proposed plan will not be implemented by USFS ▪ Concern for humane treatment of horses- humane treatment would not involve euthanasia |

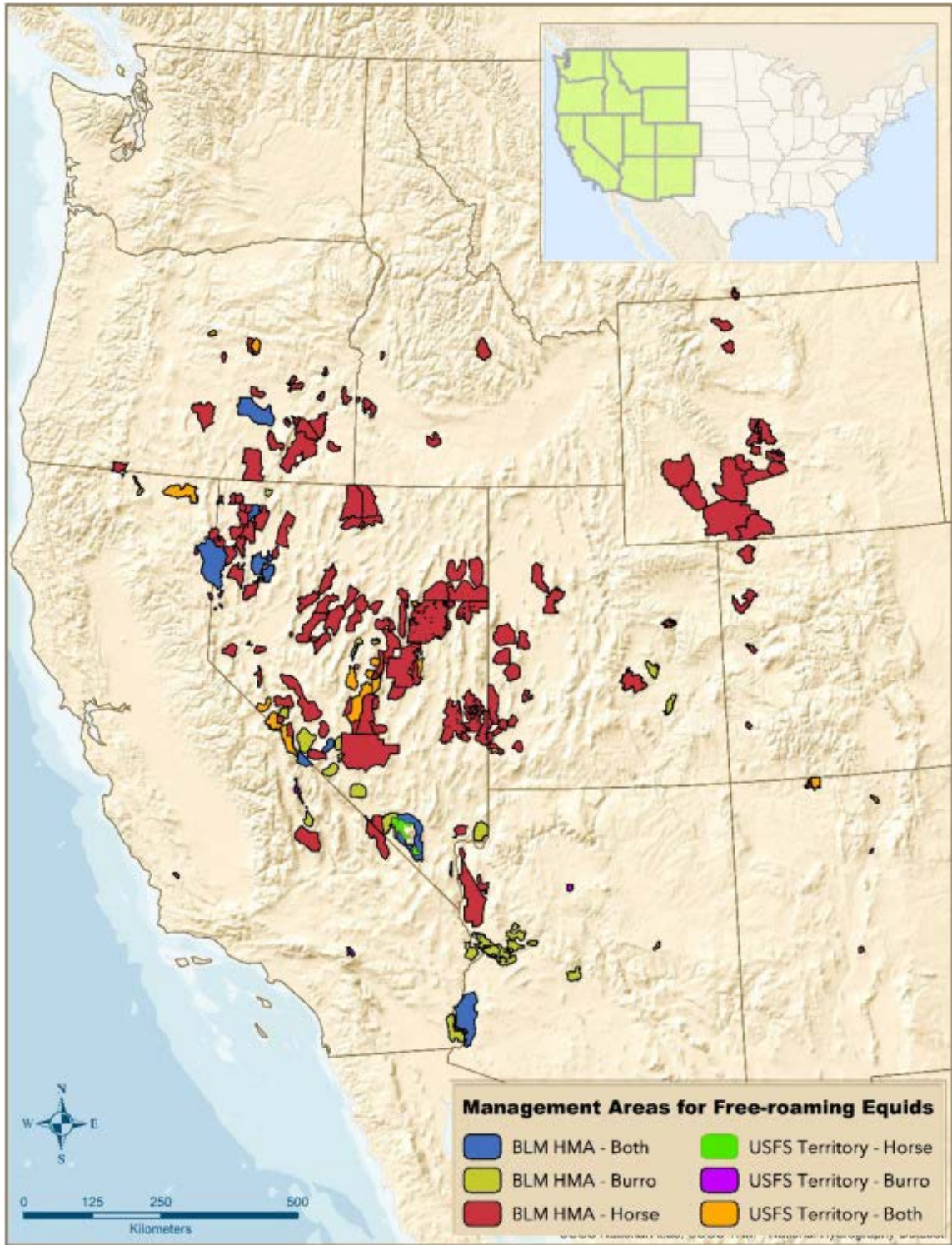
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| | <p>Horse Advocates</p> | <ul style="list-style-type: none"> ▪ Belief that horse population surveys are biased Some respondents question whether a horse herd can increase 15-20% per year ▪ Belief that there is unequal distribution of forage ▪ Belief that ranchers don't want any horses on the landscape- have been shooting the horses in the area. ▪ ▪ "I am used to have (special) permission to photograph, stay longer on some areas than the typical 14 days – now, the FS won't even talk to me or stop their vehicle to talk to me." ▪ Open working relationship with horse advocates, AZGFD, ranchers) <p>–" it's hard to get local people involve because they are scared of the ranchers (threats</p> <ul style="list-style-type: none"> ▪ " More distrust once this issue came off hold (last 3 yrs). Seibert cattle company are based out TX, it is hurtful that they have no investment (personal) in the local economy, lifestyle – too much power. Larry Gibson does not own the cattle, just manages. The locals are scared of him and the Seibert's" ▪ "It was the issue of PZP that really created the divide between the horse groups, those that believe it should be used (Salt River and they have hate groups against the International Society for the Protection of Mustangs Iand those that don't think it is a good option." ▪ ".....realize the ranchers in the area don't like the horses and the hunters don't want them there. It is an education issue, cows and horses (and elk) impact the environment differently. Having ranchers and horse advocates in the same room is dangerous, but they need to come together to come up with solutions. There needs to be compassion to the horses, the cows and to the people's livelihood and their culture." ▪ "Harmony is vital. Fish Creek HMA in NV, the ranchers rounded up some |
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| | | <p>of the mustangs and fenced off the water supply and the food supply – that can't happen in Heber"</p> <ul style="list-style-type: none"> •Biggest issue for the horses is the ranchers. It is all a numbers game, ranchers push the agenda that the horses weren't there, they came after the fire, constantly trying to get the horses removed." ▪ "There is a lot of distrust with the Forest Service they are lacking in their transparency" ▪ "Cattlemen did a roundup of 87 horses in 2005. The rancher Gibson said that after the fire, the ranchers said that horses came out from the Indian reservation. The band inspector from Navajo County supported the roundup, but did not admit to supporting the roundup at the public meeting." ▪ " You Will have trouble getting ranchers to agree to anything except what they want. Ranchers have a right to the land, but our government needs to realize that the ranchers have thought that they own the land for years." ▪ |
| | <p>Ranchers Sportsmen / Wildlife Representatives Range Scientists Horse Advocates</p> | <p>Working Group:</p> <ul style="list-style-type: none"> • will require a collaborative effort, from an engaged team, based on trust. • Participants should have good familiarity with the landscape and Territory • Open working relationship of all members Honest/candid exchanges among WG members • Disagree respectfully – maintain a civil, honest tone in all discussions • Work for consensus, but respect and record dissenting views • Address all concerns and issues • Inclusiveness • Commitment to the process and follow through • Transparency in recommendations and decision-making • Agreement on approach to management/strive for consensus when possible |

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| | | <ul style="list-style-type: none">• Clear commitment from FS – in terms of WG goals/parameters, constraints, capacity• A major goal of the WG should be learning – about actual field conditions, use of science in decision making, laws and policies, perspectives of other stakeholders• Flexibility regarding outcomes |
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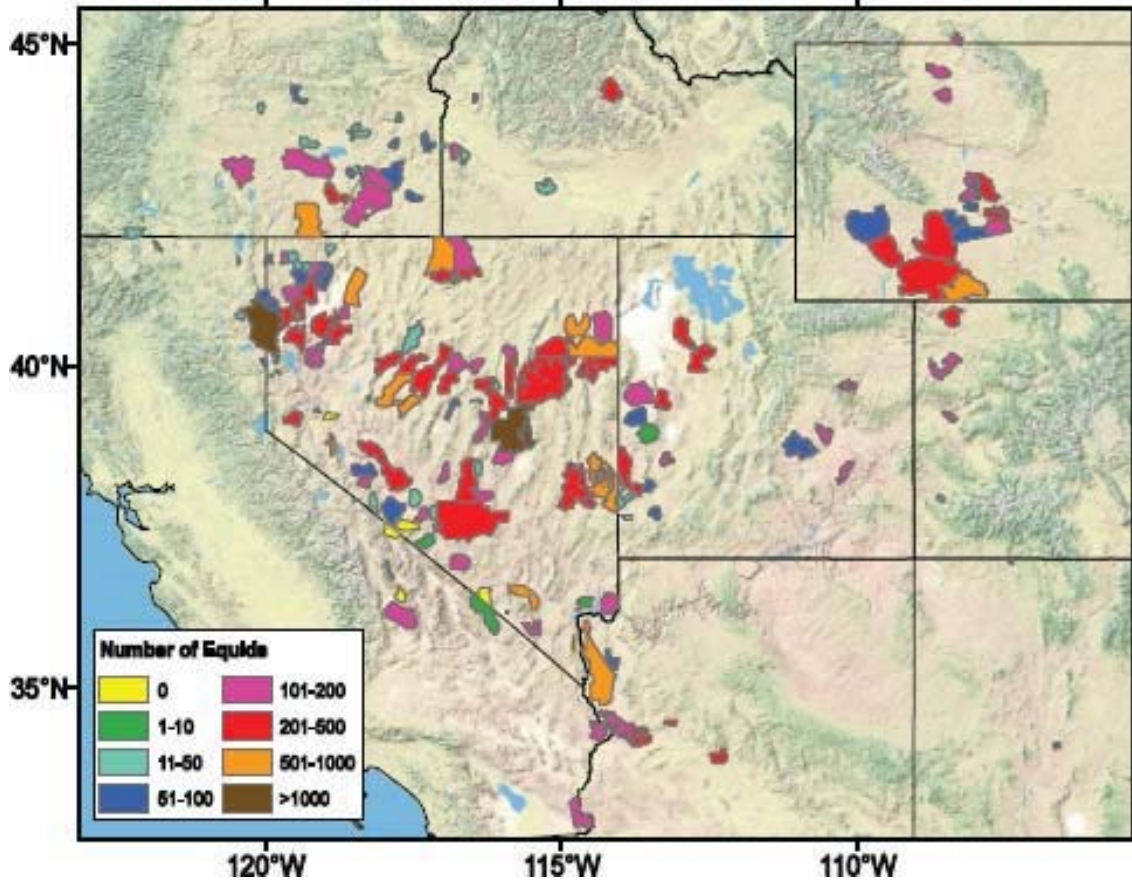
APPENDIX C

MANAGEMENT AREAS FOR FREE ROAMING EQUIDS (BLM, 2018)



APPENDIX D

HERD AREA STATISTICS (BLM, 2012)



APPENDIX E
IRB APPROVAL



EXEMPTION GRANTED

Michael Schoon
 Sustainability, School of
 480/965-0919
 Michael.Schoon@asu.edu

Dear Michael Schoon:

On 3/13/2017 the ASU IRB reviewed the following protocol:

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| Type of Review: | Initial Study |
| Title: | The Wild Horse Controversy in Arizona: Ethical Dimensions and Policy Making |
| Investigator: | Michael Schoon |
| IRB ID: | STUDY00005827 |
| Funding: | None |
| Grant Title: | None |
| Grant ID: | None |
| Documents Reviewed: | <ul style="list-style-type: none"> • HRP-PROTOCOL - Heber Wild Horse Territory case study - Murphree.docx, Category: IRB Protocol; • HRP-Consent SocialBehavioral - Heber case study - Murphree.docx, Category: Consent Form; • Mgt Strategy Parameters for developing the HWHT Plan.docx, Category: Other (to reflect anything not captured above); • Working Group Interview Questions.docx, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Working Group Concept Paper.docx, Category: Other (to reflect anything not captured above); • Recruitment for Working Group and Interview Questions.docx, Category: Recruitment Materials; |

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/13/2017.

APPENDIX F
INTERVIEW FRAMEWORK

Protocol Overview

The following is a preliminary interview protocol prepared for my PhD dissertation. It is designed to elicit stakeholder attitudes toward the horse and their knowledge of its natural history and behavior as well as general management goals. These questions, together with stakeholder's detailed responses, will allow me to examine the long-running dispute over wild horse management in order to determine how this debate might be shaped by the mixture of interpretations of the science behind the ecology and management of free-roaming horse management and normative (ethical) beliefs/claims of different stakeholders. My goal is to explore the degree to which stakeholders draw on different understandings of the natural history, animal behavior and ecology relevant to the Heber Wild Horse Territory case as well as how these groups might be displaying different ethical orientations toward the free roaming horse. Finally, I will explore how these different understandings of the ecology and behavior of the horse -- and different value orientations toward wild horses and to its habitat and the landscape more generally -- contribute to specific attitudes toward horse policy and management.

Responses/content from this interview will be synthesized and coded for relative themes. These responses will NOT be shared with other Working Group members or with the public. Information will NOT be attributable by name. I encourage all stakeholders to be as candid as they feel comfortable in order to understand the complexity of the management of the Heber Wild Horses.

Interview Script and Questions

Southwest Decision Resources introduction and purpose of the interview⁶

⁶ Throughout this process I served as an interviewer together with Southwest Decision Resources

- Southwest Decision Resources is based out of Tucson and Flagstaff and provides third party facilitation support for Natural Resource Collaborations.
- Our most current works includes projects surrounding watershed management, grazing issues, land use planning and recreation management.
- For the HWHT Management strategy, we will be working under a contractual agreement with the Forest Service, but will strive to represent the interests of all participants
- It's our role to support effective collaboration and balanced representation of all affected interests involved in the process
- We are calling you today because the internal team working on this (FS and Co-op agencies and the convener- Arizona State University) are beginning to identify several interested parties and appropriate representatives for a Working Group
 - You have been identified as a person of interest/expert on the Heber Horses in the Heber, Arizona area.
- We'd like to conduct a short interview with you to learn more about you and your organization and potentially offer you a longer commitment as part of that Working Group (at a later time)
- Responses/content from this interview will be synthesized and shared with other Working Group members, but information will NOT be attributable by name.
- Information gathered may be utilized to examine the wild horse controversy in Arizona in a dissertation by Julie J. Murphree, doctoral student at Arizona State University. Participants will not be identified by name only as "local rancher, horse advocate, citizen of Heber.

- We encourage you to be as candid as you feel comfortable in order for us to understand the complexity of the management of the Heber Wild Horses.

Background:

As you are aware, the Heber Wild Horse Territory (approximately 19,700 acres) is located on the Black Mesa Ranger District on the Sitgreaves portion of the Apache-Sitgreaves National Forests. With the passage of the Wild Free-Roaming Horses and Burros Act of 1971, came a mandate to establish territories and associated management plans/strategies for the use and protection of wild horses.

Goal

- The overall purpose and scope is the development of a written Heber Wild Horse Territory Management Strategy.
- As stated before, this will be achieved through a collaborative process with the development of a Working Group. There will also be public engagement throughout.

If you are ready, we'd like to proceed with a short interview (shouldn't take more than an hour of your time)

- 1) Tell me about the history of your involvement in wild horse management, and particularly your involvement in any of the discussions or activities related to the Heber Wild Horse Territory.
 - Please describe your relationships (if any) with horse advocacy groups and/or other organizations informed on Heber horses. Are these relationships local or at a broader scale?
- 2) What do you think are the primary issues in managing horses in the HWHT? Which issues do you think are of highest priority – i.e., that need to be addressed first?

- 3) How do you see your involvement in these issues going forward? What role do you see yourself playing?
- 4) What do you think are the main challenges or constraints in managing horses in the HWHT? How could these challenges be addressed?
- 5) In your view, what would successful management of horses in the HWHT look like?
- 6) What points do you think people generally agree on in managing horses in the HWHT? What are the primary points of disagreement?
- 7) What kinds of information, analysis, or research, would help address Heber horse management in the territory?
- 8) Who else do you see as key resources for this effort? Which do you see as offering the most in terms of improved solutions or outcomes? Who else would you recommend we contact?
- 9) Are you aware of the Forest Service's plan to convene a collaborative group to work on these issues?
 - What do you think are some realistic things this group could accomplish to help resolve these issues?
 - Would you be willing to participate? If so, under what conditions?
 - What do you think you could contribute to this process?
 - What (if any) would be your concerns about a process like this?
 - Are there days/times which are better for your participation?
- 10) Do you have any questions for us, or anything further you would like to discuss?

Thanks so much for your time and we'll be back in contact with you within the next few weeks.

APPENDIX G

2ND ROUND OF INTERVIEW QUESTIONS OF WORKING GROUP MEMBERS

| <u>CORE INTERVIEW QUESTIONS</u> | <u>PROMPTS</u> |
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| <p>1) How would you like to see the Heber free-roaming horse population managed? <i>What is Your ideal vision for wild horse management?</i></p> | <p>What role should humans play in managing free-roaming horses? (intense management or a hands-off approach?) Who should have a role or a voice in free-roaming horse management? Should we manage to benefit species, ecosystems or individual animals? Would your feelings on management of species in the Apache-Sitgreaves forests differ if these were not horses but “feral Hogs”? Why?</p> |
| <p>2) Why is wild horse management so controversial?</p> | <p>Which stakeholder group do you most closely align with? Which groups of stakeholders have the most to lose in this dispute? Whose voice has not been heard? In your opinion, what species (or activities) do the most damage on landscapes?(rangelands/ forests/deserts/riparian areas). what evidence supports this? What are the unique cultural issues involved with Heber Wild Horse Territory?(what affect do bordering Indian reservations have on management? What affect does facebook and other social media have?)</p> |
| <p>3) What is the value of free-roaming horses on the landscape? (Why do horses belong or not belong in wilderness areas?)</p> | <p>What terms would you use to describe free-roaming horses (domestic, wild, tame, unauthorized livestock, feral, mustang, exotic, native, non-native)Why? How do these various terms affect management? Which species belong in “wilderness?” (What is your definition of wilderness?) Do you believe a non-native label eventually wears off after years of residency? Describe the role feel free-roaming horses, cattle and wildlife should play on the landscape. Describe the types of bonds (if any) you feel humans can make with horses (or other wildlife)? How does this impact management? What firsthand experiences have influenced your attitudes towards free-roaming horses and their management? (Where have you obtained most of your knowledge and appreciation for horses?) How has the media influenced your beliefs regarding wild horses (movies, books, documentaries)?</p> |

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| <p>4) What role should science play in managing horse populations ?</p> | <p>What is the importance of and the best methods for determining population numbers, evolution, diets, behavior and habitat use of free-roaming horses? What factors constitute healthy ecosystems? (Forests/rangeland/deserts/riparian areas) What role does soil erosion, climate change, availability to water, presence of predators etc. play? What feature of ecosystems are most important to preserve? Can any species that is not native to a community “preserve” that biotic community? Do you feel the public trusts the science conducted by agencies or universities? What role should the public play in management? What is your understanding of adaptive management? What groups or individuals are qualified to conduct research or monitor effects of management? Are there other ways of knowing or understanding horse ecology and behavior (besides science?) Clarify between personal knowledge/observation and things participants have heard from other sources. Ask them how they know... How do you think the horses affect the plants, other animals, and the land? For govt workers, just ask: what ecological effects do the horses have in the Heber Wild Horse Territory? (Interactions or competition with cattle, elk, deer, pronghorn, Mexican meadow jumping mouse?)</p> |
| <p>5) How have current policies affected agencies’ ability to manage free-roaming horses?</p> | <p>Taylor Grazing Act 1934 (Pub.L. 73–482) http://legisworks.org/congress/73/publaw-482.pdf <u>Multiple Use Sustained Yield Act 1964 (as amended)</u> https://www.fs.fed.us/emc/nfma/includes/musya60.pdf <u>National Environmental Policy Act of 1969</u> The purpose of NEPA is to ensure that environmental factors are weighted equally when compared to other factors in the decision making process undertaken by federal agencies and to establish a national environmental policy. Requires environmental assessments/environmental impacts statements of any federal action that might have a major impact on “any and all aspects of our life and world, including wild horses and burros...” Downer, 2014) https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/Req-NEPA.pdf <u>Wild & Free roaming Horses and Burros Act of 1971</u> Declares that wild horse and burros are “living symbols of the historic and pioneer spirit of the West” they “contribute to the diversity of life forms within the nation and enrich the lives of the American people” wild free-roaming horse and burros shall be protected from capture, branding , harassment or death and they are to be considered in the areas where presently found (in 1971 As year round habitat area). manage to achieve and maintain n a thriving natural ecological balance on the public lands” and “at the minimum feasible level”</p> |

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| | <p>defines a wild horse/burro range, or legal area, as “the amount of land necessary to sustain an existing herd or herds of wild free-roaming horses and burros ...and which is devoted principally but not necessarily exclusively to their welfare in keeping with the multiple use management concept for the public lands.....”</p> <p>. https://www.blm.gov/or/regulations/files/whbact_1971.pdf</p> <p>Federal Land Policy Management Act of 1976.</p> <p>Amended WFHBA to allow for helicopter roundups</p> <p>https://www.blm.gov/or/regulations/files/FLPMA.pdf</p> <p>National Forest Management Act of 1976</p> <p>https://www.fs.fed.us/emc/nfma/includes/NFMA1976.pdf</p> <p>Public Rangelands Improvement act of 1978</p> <p>Required an inventory of wild horse and burros to determine appropriate management levels, or AMLS: the number of wild horses/burros sustainable by the resources of the range.</p> <p>https://www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg1803.pdf</p> <p>Burns amendment 2004 – facilitated disposal of wild horses and burros to slaughter buyers for horses or burros who are either over ten years of age or who have been offered unsuccessfully for adoption three times.</p> <p>Do you feel current policies help or hurt our ability to manage Wild and Free-Roaming Horses (as well as other species) within their territory?</p> <p>Do you feel these policies adequately reflect the public’s views for management?</p> <p>How do “living symbols of the historic and pioneer spirit of the West” preserve the “integrity, stability and beauty” of the biotic community? (taken from WFRHB act)</p> <p>Does the multiple use concept on public lands provide for equal access for all species?</p> <p>How might policy be re-written to assist management efforts?</p> |
| <p>6) What role should Animal Rights or Animal Welfare play in management efforts for free-roaming horses?</p> | <p>Should both animal rights and animal welfare be taken into consideration when managing wildlife or domestic animals?</p> <p>What rights do you feel the horses have in the forest or in the Wild Horse Territory?</p> <p>Who should speak for horses’ rights?</p> <p>Describe your feelings on designated horse territories and the rights of other species in the territory. Which species are MOST valuable (and deserve more rights?)</p> <p>Explain whether you believe wild horses are free.</p> <p>Defend your beliefs on endangered species: Should they precedence over non-endangered species?</p> <p>Should native species have more rights than non-native species?</p> <p>Describe whether you feel horses have been treated fairly regarding their management throughout U.S. History. Do they share a similar plight with other species or groups of individuals?</p> |

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| <p>7) What are your main concerns regarding population control and how should these concerns be addressed?</p> | <p>How many horses are in the Territory? How do you know? Describe your understanding and support for fertility control for horse populations? Which methods of population control do you support? (Do you support PZP, castration or euthanasia for wild horse population control?) Would you support introducing predators to control populations? Would you support re-locating horses to another area? If free-roaming horses are considered wildlife with a niche to fulfill in the ecosystem, should we regulate their numbers with hunting permits? Why or why not?</p> |
| <p>8) Describe how the Heber Working Groups' activities have benefitted free-roaming horse management and what further issues need to be addressed for continued management.</p> | <p>Have your main concerns regarding horse management been addressed? Have any groups (or voices) been left out? Have your attitudes toward Heber horse management or stakeholders changed as a result of participating in the working group? If so, how? How can the Heber working group's efforts assist other horse territories? What types of activities promote trust building? What might you (or the working group) have done differently to enhance decision making? Do you feel a top down or bottom up approach works best when managing species that do not fit nicely into current management for wildlife or domestic animals?</p> |

APPENDIX H
QUALITATIVE ANALYSIS

Credibility for my case study (confidence in the truth of findings) was achieved through prolonged engagement with research subjects, continual observation, peer debriefing (confirmation of field notes by meeting with peers after working group meetings), triangulation (convergence, complementarity, and divergence of data material) and member checks (informant feedback). Referential adequacy materials took the form of field notes, coding memos, audio-recordings and written response of the interviewees. These materials were triangulated with field notes taken before, during, and after each interview (Lincoln & Guba, 1985).

After being reviewed for accuracy, interview transcriptions were considered ready for coding. While there are various approaches to coding, my analysis involved approaches outlined in Johnny Saldana's *The Coding Manual for Qualitative Researchers* (Saldana, 2016). I generated priori codes for attitudes towards the horses by creating a list of seven human constructed terms utilized for free-roaming horses: wild, feral, native, invasive, domestic, de-domestic and tame (see Appendix A). After an initial round of coding for these value statements, use of these terms were cross checked with definitions and application in various scientific journals as well as recognized use in policy by Federal and State Agencies. The overarching goal was to determine if use of these terms implied a desired management preference for the horses as well as various interpretation of the ecological and behavioral science used to manage the horses. I also examined the use of these various terms throughout the collaborative working Group. Would the use of such terms help or hinder Collaborative Learning, or would they create dis-trust and a feeling of exclusion?

My second and third round of coding for the interviews examined desired management as well as potential (or perceived) challenges within the working group. Stakeholder statements were grouped into six categories: Horse population (origin

and numbers), multiple use/ forage allocation, Desired habitat and Science and Management, Economics, Trust and Successful Collaboration. How would the Working Groups individual interviews correlate with findings of the entire group? Would there be noted changes that could indicate Collaborative learning within the group?