

2015-02-09

The dimensionality of human-free roaming horse interactions in Alberta

Kincaid, Adela Tesarek

Kincaid, A. T. (2015). The dimensionality of human-free roaming horse interactions in Alberta (Doctoral thesis, University of Calgary, Calgary, Canada). Retrieved from <https://prism.ucalgary.ca>. doi:10.11575/PRISM/28065

<http://hdl.handle.net/11023/2097>

Downloaded from PRISM Repository, University of Calgary

UNIVERSITY OF CALGARY

The dimensionality of human-free roaming horse interactions in Alberta

by

Adela Tesarek Kincaid

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

CALGARY, ALBERTA

FEBRUARY, 2015

© ADELA TESAREK KINCAID 2015

Abstract

Approximately 12 000 years ago wild horses were a natural part of the North American ecosystem. Contemporary DNA evidence suggests that horses (*Equus lambei*) spread from North America to populate all other areas of the world. Domestic horses (*Equus caballus*) were reintroduced to North America during colonization; through escape or release, they established themselves once again on the landscape and currently inhabit areas of the western USA and Canada. The overarching goal of the research is to describe the perspectives and discourses of multiple and collective actors toward FRH in the research area and to demonstrate the necessity of broadening the basis of decision making in policy related to FRH.

I used qualitative research approaches including semi-structured interviews that focused on 24 respondents. I documented perspectives of local people who share the land with FRH as well as those with multi generational knowledge. Mainly, I relied on transdisciplinarity and situational analysis (also referred to as social mapping) as the theoretical and methodological framework for my research. These two approaches helped clarify the wicked, complex problems associated with FRH.

FRH are a source of social conflict in the study area, which is mainly located west of Rocky Mountain House, Sundre and Cochrane. This research indicates that the majority of respondents agree with having FRH on the Alberta landscape; the main debate concerns population numbers. Respondents vary in their descriptions of timelines, ancestry, phenotypical features and classifications of FRH. Practically, local interactions with FRH include benefits such as capturing and using horses for breeding, work and recreation, as viewing opportunities, as spiritually significant, and for their historic worth. Reported problems include FR stallions stealing and breeding domesticated mares, FRH destroying fences, damaging reforested areas,

and competing for grass with cattle. Broadly this research demonstrates a lack of extant data about different perspectives on FRH. Filling this knowledge gap can help to strengthen the basis of decision making that is required to make fully informed decisions about FRH policy.

Acknowledgements

I am extremely grateful and thankful to my supervisor, Dr. Dianne Draper, without whom this research would not have been possible. Her endless encouragement and friendship throughout the research process was invaluable. I also thank Dr. Dianne Draper for her helpful comments and revisions and for always being there, above and beyond what is required of a supervisory role. I am thankful to my committee members, Dr. Shelley Alexander, Dr. Mike Gibeau and Dr. Cormack Gates for their encouragement, advice and suggestions. I am grateful to the Department of Geography at the University of Calgary for financial assistance, to Robin Poitras for his cartographic help and to Paulina Medori for her helping with all things administrative.

Thank you to my parents, who first told me about the ‘wild’ horse that they saw and for their courage in bringing me to Canada. I also owe a big thank you for their babysitting services throughout this process.

I would like to acknowledge the people whom this work is all about. Thank you to all those who participated, offered guidance, contacted other knowledge holders, shared family photos and experiences, spent their time with me and answered my numerous questions. I thank you for taking the time to share a little part of your lives with me. I am very grateful to Alex Bartholomew and Bob Henderson for providing amazing photographs of horses they observe for me to use throughout my research.

Lastly, I acknowledge the horses that inspire my work...

Dedication

This thesis is for my children, Avery and Ashton, who fuel my curiosity for how the world works and who encourage me to keep asking why...and to my partner in life who accompanied me through all aspects of this journey.

Table of Contents

Abstract	ii
Acknowledgements	iv
Dedication	v
Table of Contents	vi
List of Tables	x
List of Figures	xiii
List of Plates	xiv
List of Symbols, Abbreviations and Nomenclature	xv
Epigraph	xvi
 CHAPTER 1: INTRODUCTION	 1
1.1 Research Evolution	6
1.2 Research Purpose	9
1.3 Thesis Rationale	9
1.4 Practical Research Outcomes	13
1.5 Local, Historic, Cultural Research Outcomes	15
1.6 Theoretical Research Outcomes	16
1.7 Research Questions	17
1.8 “Subjectivity”, Reflexivity, Transparency and Rigour	18
1.9 Personal Reflection on Qualitative Research	22
1.10 Reflexivity on Personal Values	23
1.11 Thesis Outline	26
 CHAPTER 2: THEORETICAL BACKGROUND	 30
2.1 Wicked Problems and Qualitative Research	30
2.1.1 Wicked Problems	30
2.1.2 Qualitative Approaches and Trying to ‘Solve’ Wicked Problems	34
2.2 Theoretical Perspectives	38
2.2.1 Situational Mapping	38
2.2.2 Knowledge Arena	42
2.2.3 Disciplinary Arena	43
2.2.4 Theoretical Arena	45
2.2.5 Transdisciplinarity	46
2.2.5.1 Defining Transdisciplinarity	48
2.2.5.2 Postmodernism, Situational Analysis and Transdisciplinarity	51
2.3 The Evolution of Postmodernist Theory and Geography	55
2.4 Conclusion	58
 CHAPTER 3: USING SOCIAL MAPPING TO GROUND FOUNDATIONAL LITERATURE AND KNOWLEDGE	 59
3.1 Government, Science and Research Arena	62
3.1.1 Forestry	64
3.1.2 FRH Grazing Competition with Wildlife and Cattle	65
3.1.3 Rangeland Health (Synonym Range)	67
3.1.4 Horses as Returned Wildlife	71

3.1.5 FRH Biology	71
3.2 Industry Arena	74
3.2.1 Mining	76
3.2.2 Logging.....	76
3.2.3 Oil and Gas	77
3.3 Legislative Arena	78
3.3.1 Policy, Laws and Definitions of FRH	81
3.3.2 Canadian Laws and Policies	82
3.3.3 United States and FRH	90
3.4 Socio-Cultural Arena	92
3.4.1 Overview of Socio-Cultural Worlds.....	95
3.4.1.1 Local Politics	97
3.4.1.2 Protectionist Oriented World(s) and WHOAS Worlds.....	97
3.4.1.3 Outfitters and Horse Capture Practices Worlds.....	98
3.4.1.4 Indigenous, Métis, Settler Descendents, Lifelong Inhabitants Worlds.....	99
3.4.1.5 Alberta Trappers Association and Hunters Worlds	100
3.4.1.6 Wardens, Outfitter, Tourism Worlds	101
3.4.1.7 Local Research Worlds	102
3.4.1.8 Permit Inspector World.....	104
3.4.1.9 Ranchers/Grazing Leases Worlds	105
3.4.1.10 Government and Industry Worlds.....	105
CHAPTER 4: METHODS	107
4.1 Interview Guide and Interview Logistics.....	107
4.2 The Lived Experience of Field Research.....	109
4.3 Consent and Potential Harm to Respondents.....	112
4.4 Three Phases of Data Collection.....	113
4.4.2 Participant Selection.....	117
4.4.3 First Phase of Fieldwork (schedule)	120
4.4.4 Second Phase of Fieldwork	121
4.4.5 Third Phase of Fieldwork	124
4.5 Ethics	124
4.6 Research with Indigenous Peoples	125
4.7 Limitations	126
4.8 Transcribing Data	127
4.9 Data Organization	128
4.9.1 Coding	128
CHAPTER 5: RESULTS AND DISCUSSION-LOCAL KNOWLEDGE, HORSE ORIGINS AND CLASSIFICATIONS	133
5.1 (Local) Knowledge, Experts, Wisdom and Decision Making Regarding FRH....	133
5.1.1 Knowledge and Experts.....	135
5.1.2 Métis Connections to FRH in Alberta	139
5.1.3 What is Wisdom and How is it Related to Knowledge?	146
5.2 Horse Domestication, Theories on Horse Origins in North America.....	151
5.2.1 A Brief History of Horse Domestication	152
5.2.3 Primarily Western Theory on Indigenous People and FRH	154

5.2.4 Alternative Theor(ies) on FRH from Indigenous Perspectives	155
5.3 Described Timelines, Ancestry, Phenotypes and Classifications of FRH.....	159
5.3.1 Time Line of FRH in Alberta	159
5.3.2 Bloodlines/Ancestry of FRH in Alberta	163
5.3.3 Phenotypes and Behavioural Traits of FRH in Alberta.....	166
5.3.4 Respondent Classification of FRH	169
 CHAPTER 6: RESULTS AND ANALYSIS-PROBLEMS, BENEFITS AND PREDATOR PREY RELATIONSHIPS WITH FRH	 176
6.1 Geographical Discrepancies and Grouped Responses	176
6.2 FRH Population Numbers, Benefits and Problems	180
6.3 Problem Categories.....	182
6.4 Grouped Answers to Problems FRH may Cause.....	183
6.5 Grazing Competition with Cattle	184
6.6 FRH and Vehicle Collisions	188
6.7 FRH Pollute Water Bodies	189
6.8 Free Roaming Stallions Breed or Steal Mares	191
6.9 Carry and Transmit Disease.....	192
6.10 Compete for Grass with Wildlife.....	193
6.11 FRH Trample Plants	196
6.12 FRH Negatively Impact Recreational, Spiritual, Private Land	197
6.13 Reported most Severe Problems	199
6.14 Predator – Prey Relationships Related to FRH.....	201
6.14.1 Wolves	202
6.14.2 Wolf Predation.....	204
6.14.3 Grizzly Bears	205
6.14.4 Cougars and Wolves.....	206
 CHAPTER 7: RESULTS AND ANALYSIS-FRH MANAGEMENT	 208
7.1 Grouped Responses to Management.....	209
7.2 Aerial Shooting	214
7.3 Poisoning	216
7.4 Trapping.....	217
7.5 Rounding up and Selling Horses	220
7.6 Using Barriers such as Fences to Contain Horses	222
7.7 Implement Birth Control Methods.....	224
7.8 Develop Parks/Areas where Horses can Live.....	225
7.9 Further Themes Related to Management.....	227
7.9.1 Leave FRH Alone.....	227
7.9.2 FRH are Wildlife	228
7.9.3 FRH should Remain on the Landscape	229
7.9.4 Breeding Stock	229
7.9.5 Range Health	230
7.9.6 Ranchers need Incentives to Manage FRH on Grazing Leases.....	231
7.9.7 Legislation	233
7.9.8 Permits.....	236
7.9.9 FRH Workshop (working group)	237

7.9.10 Management Suggestions	238
CHAPTER 8: SUMMARY AND RECOMMENDATIONS	242
8.1 Some Concluding Thoughts on my Research.....	242
8.2 Concluding Thoughts on the Relevance of Local Knowledge	244
8.3 Research Questions Revisited.....	245
8.4 Recommendations Derived Through Direct Interview Questions.....	254
8.5 Recommendations Based on Respondents' Independent Input	259
8.6 Future Research	264
8.7 Where do we go from here?.....	264
8.8 Future Directions	265
REFERENCES	267
APPENDICES	282
Appendix 1: Interview Guide	282

List of Tables

Table 1.1: Examples of Online Positions Regarding FRHs.....	11
Table 1.2: Specific Research Outcomes and Potential Interest Groups.....	14
Table 1.3: General Theoretical Contributions	17
Table 1.4: Research Goal, Objectives and Questions	18
Table 1.5: My Values Compared Against Generally Observed Local Values	23
Table 1.6: Basic Values Dealing with Positions on Nature and Wildlife	25
Table 2.1: Traits of Wicked Problems and Examples of their Relationship to FRH.....	32
Table 2.2: Characteristics of Arenas and Worlds	39
Table 2.3: Comparison of Characteristics in Transdisciplinarity, Policy Sciences and Situational Analysis.	53
Table 2.4: Theoretical Principles of Transdisciplinarity and Critical Realism.....	55
Table 3.1: Examples of Different Perspectives to Similar Research	64
Table 3.2: Definitions of Lands Partially or Fully Allocated to Grazing	70
Table 3.3: Excerpts from National Horse of Canada Act	83
Table 3.4: Excerpts from Laws, Policies and Management of FRH in Eastern Canada	84
Table 3.5: Excerpts from Laws, Policies and Management of FRH in British Columbia.....	86
Table 3.6: Excerpts from Laws, Policies and Management of FRH in Saskatchewan.....	87
Table 3.7: Excerpts from Laws, Policies and Management of FRH in Alberta	89
Table 3.8: Excerpts from Laws, Policies and Management of FRH in the United States	91
Table 3.9: Literature Review: Focus of, and Solutions to, Wicked problems	93
Table 3.10: Overlapping Respondent Worlds.....	96
Table 3.11: Voting Trends in the Research Area.....	97
Table 3.12: Locally Based Literature and Local Research	103

Table 4.1: Interview Specifications	108
Table 4.2: Locations of Potential Respondents.....	115
Table 4.3: Descriptions of Types of Purposive Sampling Used in Research	118
Table 4.4: Saturation: Knowing When to Stop Collecting Data.....	120
Table 4.5: Interview Schedule Summer 2010 (Phase 1).....	121
Table 4.6: Interview Schedule Summer 2011 (Phase 2) and Winter 2012 (Phase 3).....	123
Table 5.1: Temporal Description of Respondents Involved with FRH	139
Table 5.2: Arguments Supporting Oral History of Horses Being Present Prior to European Colonization.....	157
Table 6.1: Respondents Grouped According to Experience with FRH and Positions Toward FRH.....	178
Table 6.2: Generalized Short Answers to Problems FRH may Cause.....	184
Table 6.3: Respondent-Identified Problems and Benefits of Free Roaming Horse Grazing.....	185
Table 6.4: Comments on Horse Grazing Physiology.....	186
Table 6.5: FRH and Vehicle Collisions	189
Table 6.6: Respondent Positions on FRH Disease Transmittal	193
Table 6.7: Summary of Comments Regarding FRH Competition for Forage with Wildlife	195
Table 7.1: Agreement and Disagreement to Selected Management Techniques.....	209
Table 7.2: Grouped Responses to Specific Management Techniques	213
Table 7.3: Respondent Positions Toward Using Poison as a Management Tool	217
Table 7.4: Support and Opposition to Using Fences as FRH Management Tools	224
Table 8.1: Support for Research Question (1. a)	245
Table 8.2: Support for Research Question (1. b)	250
Table 8.3: Support for Research Question (2. a) in Table 1.4	250
Table 8.4: Prominent Benefits and Problems	252
Table 8.5: Support for Research Question (2. b)	253

Table 8.6: Support for Research Question (3)	254
--	-----

List of Figures

Figure 1.1: Map of Majority of FRH in Alberta	2
Figure 1.2: Evolution of Defining Local Perspectives.....	7
Figure 1.3: Competing Land uses with FRH	10
Figure 1.4: Interdependency of Theory, Method, Data Collection and Analysis.	27
Figure 2.1: Theoretical Social Map	41
Figure 3.1: Government, Science and Research Arena	63
Figure 3.2: Commonalities in Understanding of Rangeland Health.....	68
Figure 3.3: Industry Arena.....	75
Figure 3.4: Legislative Arena	80
Figure 3.5: Socio-Cultural Worlds in the Local Arena.....	94
Figure 4.1: Three Phases of Fieldwork	114
Figure 4.2: Benefits of Transcribing Data	128
Figure 4.3: Thematic Organization of Discourse-Transcribed Interviews	130
Figure 4.4: Methodological Loop	131
Figure 5.1: Local Aspects and Comments on Decision Making Regarding FRH	135
Figure 5.2: Local Research and Cultures Involved with FRH in Alberta.....	141
Figure 5.3: Positions of Worlds on Local Involvement with FRH Policy.....	145
Figure 5.4: Data, Information, Knowledge, and Wisdom Model	148
Figure 5.5: Respondent Discourse on FRH Origins	161
Figure 5.6: Respondent Positions on Horse Origins in Alberta.....	163
Figure 5.7: Local People's Classifications of FRH	169
Figure 6.1: Respondent Positional Map of Free Roaming Horse Population Numbers and Benefits/Problems.	181
Figure 8.1: Relationships Between Worlds and Positions of Historic Connectivity to FRH	247

List of Plates

Plate 3.1: One Harem of Free Roaming Horses.....	72
Plate 3.2: Young Free Roaming Horse	73
Plate 4.1: Picture of a Tornado Encountered Near Sundre	111
Plate 5.1: Male Free Roaming Horse in the Winter.....	167
Plate 5.2: Example of a Herd of Free Roaming Horses	174

List of Symbols, Abbreviations and Nomenclature

<i>Symbol</i>	<i>Definition</i>
AAG	Association of American Geographers
AESRD	Alberta Environment Sustainable Resource Development
DIKW	Data, Information, Knowledge, Wisdom model
FRH	Free Roaming Horses
HWC	Human Wildlife Conflict
LK	Local Knowledge
MNA	Métis Nation of Alberta
RMTRI	Rocky Mountain Traditional Research Institute
SRD	Sustainable Resource Development
TEK	Traditional Ecological Knowledge
WHOAS	Wild Horses of Alberta Society
WWF	Willmore Wilderness Foundation

Epigraph

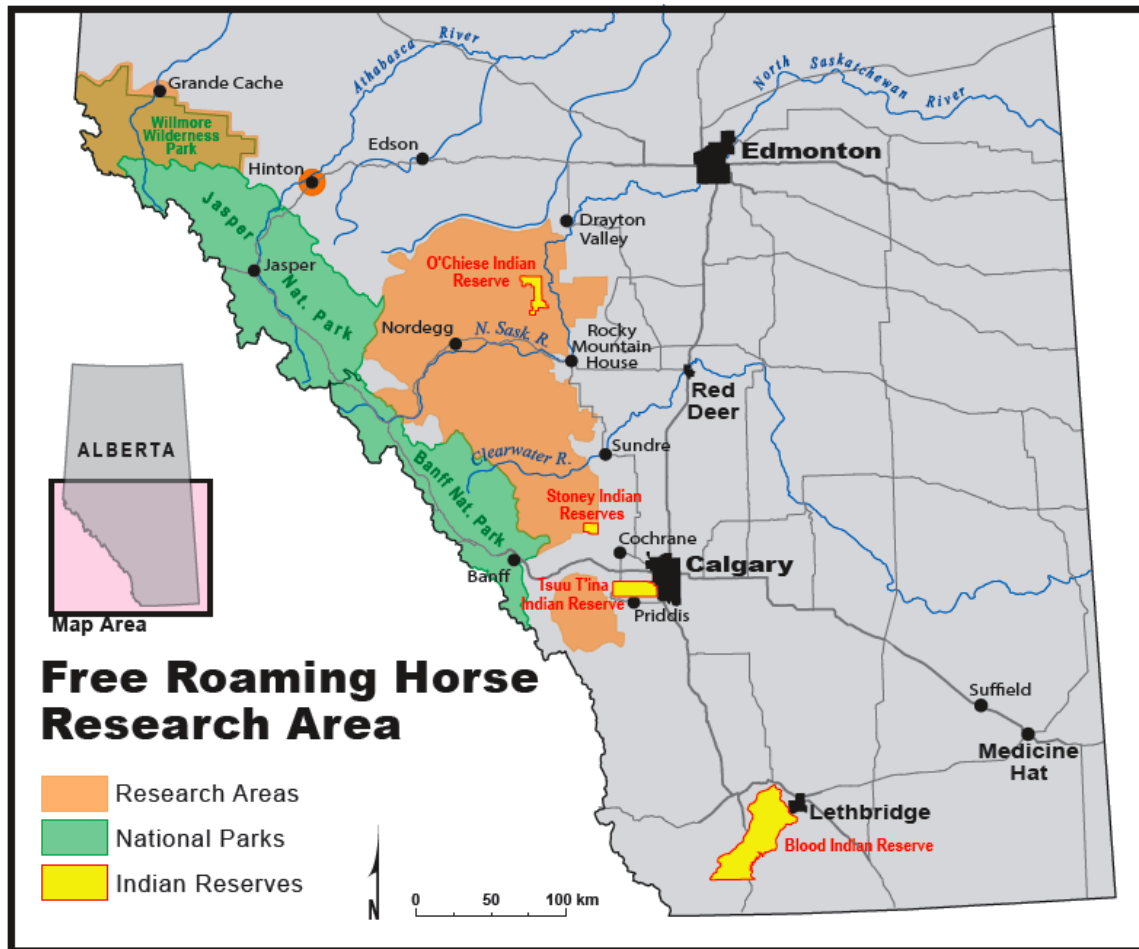
...stories are a special genre. They are not lists of codes or categories. They are not frequencies. They are not decontextualized intellectual objects. Nor are maps....Maps and stories both 'cohere'.... their patterns end up linking codes, categories, themes, and other elements that become an analysis.

Adele Clarke, 2005, p. 300

CHAPTER 1: INTRODUCTION

Approximately 12 000 years ago wild horses (*Equus lambei*) were a natural part of the North American ecosystem. Contemporary DNA evidence suggests that horses spread from N. America to populate all other areas around the world (Luis, Bastos-Silveira, Gus Cothran & do Mar Oom, 2005; Kirkpatrick & Fazio, 2010). Domesticated horses (*Equus caballus*) were reintroduced to North America during colonization, escaped or were released, and became feral or reverted back to a wild state. Contrary to this western scientific standpoint some Indigenous oral knowledge suggests that horses remained on the North American continent and were part of an Indigenous horse culture (Henderson, 1991). I use the term Indigenous to refer to people who occupied North America prior to European colonization. I use the terms First Nations or Aboriginal when that was the terminology used within the referred to literature, legal documents, and other discourses. Free roaming horses (FRH) currently inhabit areas of the western USA and Canada. One such area with a population of approximately 500-1000 horses exists within a loose boundary east of Banff and Jasper National Parks north of Cochrane, east of Rocky Mountain House and Sundre but reaches as far north as Grande Cache, Willmore Wilderness Park, and Hinton (see Figure 1.1). I have used similar geographic perimeters to define the FRH research area as the ‘horse capture’ zone identified by the Alberta ESRD. FRH are fluid and occupy several geographical areas throughout Alberta. The majority of people interviewed spoke of horses within the boundaries of the capture zone but historic and current accounts of the horses include other areas within the province.

Figure 1.1: Map of Majority of FRH in Alberta



Horse numbers constitutes one area of contention between interest groups. Another area of social conflict consists of arguments that ‘free-range’ horses either are ‘wild’ because they have been living in the wilderness for a minimum of 100 years or are ‘feral’ because they were once released or escaped from those who colonized the area or from Indigenous reserves. Other arguments lie in between or beyond these two perspectives. Legally, the horses are labelled as feral in Alberta and fall under the Stray Animals Act. A ‘feral’ designation means the horses are not protected as wildlife. As a result of a complex history and socially divisive views, free roaming horses (FRH) are

challenging to categorize and manage. Creating policy relating to FRH also affects local interest groups and continues to be problematic for land and wildlife managers.

The place (belonging) of FRH on the landscape is controversial and is debated by local people, interest groups, government and industry as well as by those living outside of the area. Attitudes toward the horses aside, the horses have occupied the area for at least 100 years. As a result of a complicated history and conflicting local perspectives, free roaming horses (FRH) pose a challenging management problem for land and wildlife managers. There are no plans at this time to completely remove FRH from the area. Thus, social mapping of local perspectives and experiences with the horses may illuminate similarities and differences between and among local groups and individuals. Local attitudes, cultural perceptions and knowledge gained through experience by those impacted, living with or in close proximity to FRH may help in providing information to inform future policy concerning FRH. Providing descriptions of and explanations for perspectives of those involved with FRH may help to mitigate the conflict that exists among actors and increase chances of successfully implementing practical and useful policies.

The overall theme in my research of complexity extends to classifying FRH and their place on the landscape, teasing apart and bringing together situations and perspectives of interest groups and categorizing the topic according to siloed disciplines. As a research topic, FRH are difficult to categorize. The horses themselves are argued to be feral, wild, a mix of the two or in a category of their own. Individual, group and community perspectives are difficult to tease apart and bring together because local people are often interrelated both biologically and socially. For example local Métis

people or people of mixed Indigenous origin are connected through family (DNA), community, descendents of settlers originally from Europe, to more recent newcomers to local communities and to Indigenous people. That is why situational analysis in the form of positional maps (section 2.2.1) provides an appropriate research approach because these maps can be used to group perspectives not according to ‘stakeholders or stakeholder groups’ but according to situations and perspectives. Organizing interest groups based on positionality not merely as predetermined stakeholders can ‘flesh out’ similarities or salient differences within and between groups.

Separating actors into discrete groups is difficult because of the intertwined and fluid nature of familial and social interactions. For example local respondents may simultaneously be grazing land lease holders and be part of the local wild horse protectionist (NGO) group, or have Métis or mixed Indigenous ancestry while running a resort outfitting company. In an effort to try to create a more fluid and transparent representation of local people I identify the known multiple interests that respondents represent, and also divide people according to their level of direct interaction and length of time (lifetime, generational or shorter periods) spent with FRH. Focusing on temporal interactions and perspectives as well as interest groups may tap into longitudinal knowledge and provide a dynamic understanding of human horse interactions. Longitudinal knowledge could result in broadening the basis of decision making in policy related to FRH as well as make policy makers aware of a full range of perspectives.

As I began this project, I had assumed there would be clearly drawn lines between specific stakeholder groups in the research area. The more time I spent interacting with local people, the more clearly I saw the actual intertwining of the distinct groups I had

created in my mind. Similarly, the lines I used to separate the stakeholder categories were fuzzy and interrelated. My initial intention of collecting straightforward accounts of stakeholders' perceptions on FRH problems, management and definitions of feral and wild became much more complex. For instance, local perspectives are loosely organized around a temporal dimension including multi-generational accounts of horse interactions, life time or long term interactions with FRH, contemporary interactions with FRH and interactions including little contact. Organizing data temporally occurred when I realized that settler, Métis and Indigenous accounts included historic knowledge as well as alternative ways of knowing.

Given the difficulty of compartmentalization, I realized that no single discipline or perspective could be used to define the complexity of a broad topic such as FRH. For instance, the research could be placed under animal human interactions instead of the more popular human wildlife interactions because the horses are considered both feral and wild (depending on the political aspirations of the definer). History, geography, and politics are among the disciplines that helped inform the research. Instead of forcing the topic into predetermined disciplinary silos I thought it best to respect the fluid boundaries that surround the research. As a result the philosophical approach to disciplines follows that of transdisciplinarity (see 2.2.5).

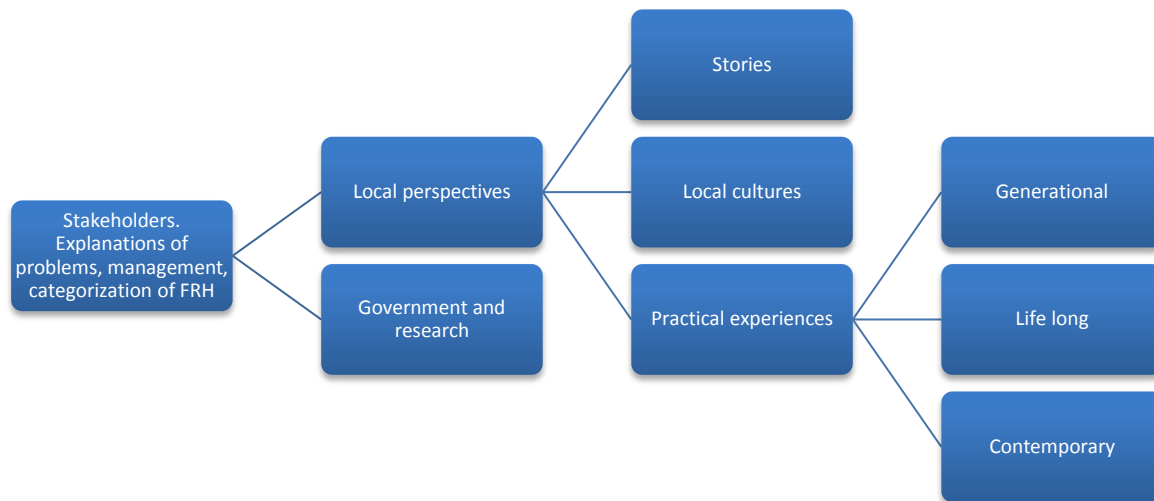
Just as multiple disciplines are needed to inform the topic of human-FRH interactions; the definition of wicked problems helped to identify the topic as uncertain, complex and beyond being easily solvable. Connections and complexity underlie definitions of problems termed complex, wicked or messy. FRH can be described as a wicked, complex or a messy problem because they involve numerous and often

intertwined perspectives and, as a result, are ill-defined (Rittel & Webber, 1973). In addition little scientific agreement exists on the causes and effects of the many physical and geographic aspects of FRH and their impact on the landscape and on wildlife (Notzke, 2012; Notzke, 2013). Interest groups use fragments of ‘science’ to support their cause. Interestingly one tenet of a wicked problem is that often incomplete information exists (LaChapelle & McCool, 2005).

1.1 Research Evolution

From a theoretical perspective, my research on FRH started by heavily leaning on theories of psychology especially values-attitudes-behaviour theory (Fishbein & Ajzen, 1975; Vaske & Donnelly, 1999; Manfredo, 2008). The project soon evolved into including stakeholders and borrowing extensively from human wildlife conflict (HWC) literature. I then turned to Clark (2002) who deals with practical applications of the policy process to HWC. My path then veered to exploring pure democracy with a more visceral involvement of participants. Although I diverted from directly applying pure democracy concepts to my work the influence of democracy percolates my research and the theory behind it. My rather sterile view of categorizing ‘stakeholders’ changed to view those I interviewed as people with stories that have connections to the land (Figure 1.2).

Figure 1.2: Evolution of Defining Local Perspectives



After reading publications by Turnbull (1997), Louis (2007) and others, I became aware that terms such as “participants”, and “respondents” suggest inequality in contribution to the research and may marginalize people from me the researcher and from the local knowledge that they are contributing (through my eyes). As a result I use such terminology with reflexivity. Through providing a short report and synopsis of the results to local communities I hope the research will be useful and relevant to all who became a part of the project. Literature on Traditional Ecological Knowledge (TEK) and local knowledge influenced mainly by Berkes (2008) and Menzies and Butler (2006) further expanded my understanding of incorporating perspectives that view animals such as FRH through alternate worldviews. From there I began to include and define historic and generational perspectives.

The differing worldviews toward FRH held by local people, Indigenous people and Métis people are difficult to compare. I was searching for a way to show the complex interconnections of people to FRH. The answer came in the form of mapping (social mapping) and situational analysis. The actual process of mapping allowed me to show and make sense of the messy interconnections while preserving the fluidity of local interrelationships. Situational social mapping allowed me to display the positions of numerous worlds within broader arenas and to look at the multiple and contradictory positions within and between the worlds. The method-theory package created by Clarke (2005) allows for analysis of the local, looking at the situation as a whole and in context, and allowed me to find a point of entry from a transdisciplinary perspective, all aspects that play a key role in my research. Upon further exploration of situational analysis I began to appreciate the power of using social maps for analysis rather than merely using the maps as tools of display. The worlds in the arenas are not groups *per se* but are visual and descriptive representations of respondents and their discourses. The existence of different ‘stories’ that relate to FRH illustrate the complicated web of interest around FRH. Because these worlds are representational only, they are not quantitatively definable or analyzable. I am trying to uncover and discover the nature of the groupings. Situational social maps are used analytically to display my assumptions and used to revise, collapse and expand items analytically (Clarke, 2005). The maps deconstruct the binary and allow readers to ‘see’ the individuals and members of social worlds as well as analyze and try to frame how people organize themselves.

I expand further on the particularities of situational analysis in the methods and results chapters. As the story of the evolution of my research unfolds and the analysis is

expanded upon I anticipate the reiteration of the epigraph below and its relevance to my work will become clearer: “....stories are a special genre. They are not lists of codes or categories. They are not frequencies. They are not decontextualized intellectual objects. Nor are maps....Maps and stories both ‘cohere’.... their patterns end up linking codes, categories, themes, and other elements that become an analysis (Clarke, 2005, p. 300).

1.2 Research Purpose

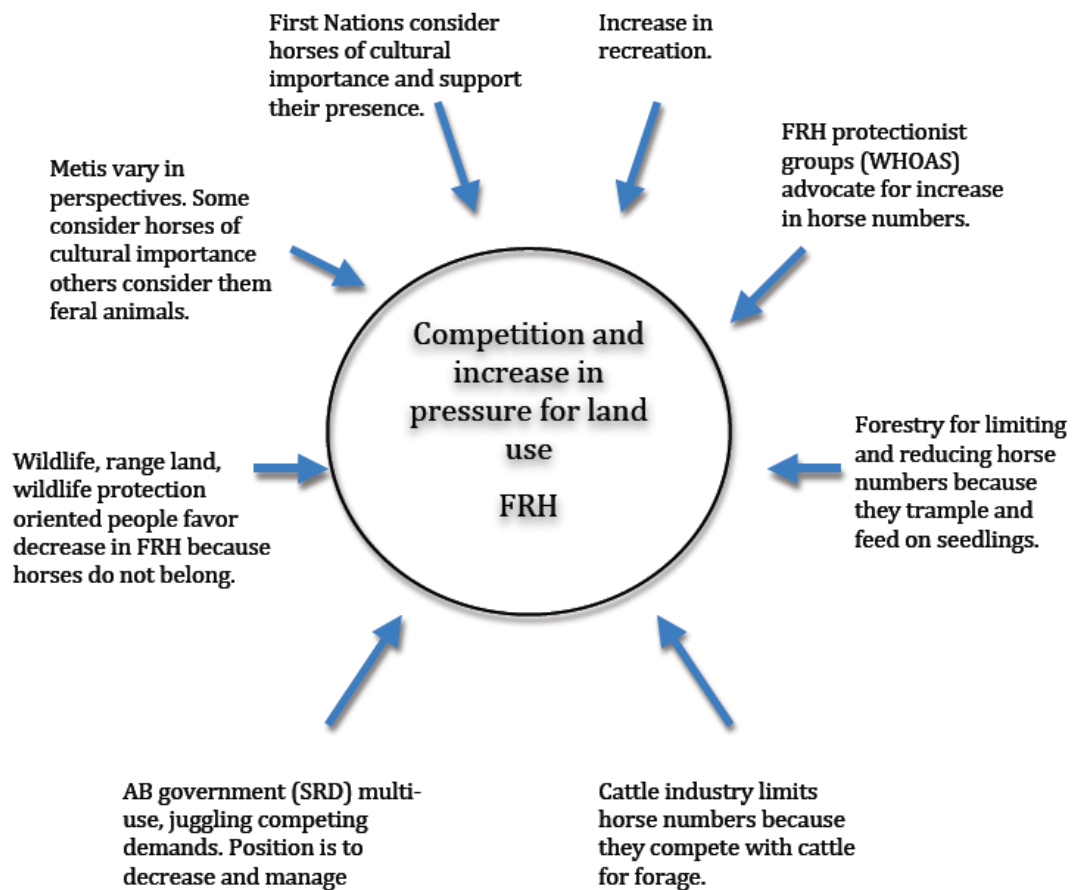
- To map and conceptualize how to move beyond a narrow scientific perspective (outlook) regarding FRH to a holistic, problem-based, contextualized method better equipped at dealing with wicked, complex problems.
- To gain local knowledge and longitudinal (temporal) perspectives regarding the cultural, historic and contemporary role of FRH in the foothills of Alberta from multiple local interest groups and individuals.
- Suggest ways in which local, practical knowledge and discourse could inform the policy process.

1.3 Thesis Rationale

Contributions to an increase in controversy regarding FRH may be explained, at least in part, by an increase in human land use in the same area that FRH occupy. The result is an increase in interactions and competition for land use. Competing land uses include an increase in recreationists (influx from the growing city of Calgary), pressure to allow for an increase in horse numbers from protectionist groups as well as artists, photographers, self proclaimed conservationists and culturally linked Indigenous and

Métis groups to horses, as well as pressure to decrease horse numbers from forestry, the cattle industry and the government (Figure 1.3).

Figure 1.3: Competing Land uses with FRH



Disagreement over FRH seems to be on the rise given land use disputes such as those between land lease holders and recreationists, an increase in media attention stories in popular literature and through strings of public online commentary following stories on

websites, blogs and through social media (Table 1.1). The controversy is often highlighted and spun around stories published by the media. Little is known about actual attitudes toward FRH from multiple local perspectives besides what is written in popular literature, shown by the media, and shared on line. My goal is to capture detailed local perspectives and discourse on the horses; including positive, negative and less aligned positions as well as perspectives of historic and cultural significance regarding FRH to the area. It is my hope that the multiple perspectives of local people are included in future policy planning and initiatives.

Table 1.1: Examples of Online Positions Regarding FRHs

Positions described on Websites
<p>Government</p> <ul style="list-style-type: none"> • Recreationists wishing access onto to leased land for grazing or agricultural purposes. • Emphasizes communication, co-operation and respect between recreationists and land lease holders. Recreationists must contact lease holders to gain permission to access leased land. <p>http://www.srd.alberta.ca/RecreationPublicUse/RecreationOnAgriculturalPublicLand/default.aspx</p>
<p>Media</p> <ul style="list-style-type: none"> • *Story now removed from the web site. Focus was on large number of horses removed from the research area by SRD. http://www.calgaryherald.com/news/alberta/Record+wild+horses+captured+this+year+Alberta/6481239/story.html • Highlights controversy between FRH forestry and those who support the horses and oppose logging http://www.cbc.ca/news/technology/story/2011/08/04/calgary-wild-horses-forestry.html • Focus on criminal shooting of FRH in the area. http://www.cbc.ca/news/canada/calgary/story/2009/04/29/cgy-sundre-wild-horses-shot.html • Focus on horse cull and wild horse advocates (Donovan, 2014) http://www.thestar.com/news/canada/2014/01/24/albertas_wild_horse_cull_angers_animal_advocates.html

Positions described on Websites
<p>Blogs (NGO groups)</p> <ul style="list-style-type: none"> • Canadian horse defence Coalition’s blog. Advocate group for the protection of horses against “slaughter of equines for human consumption in Canada”. http://canadianhorsedefencecoalition.wordpress.com/2012/03/13/alberta-government-decimates-wild-horse-herds/ • The Northern Horse and WHOAS: Advocate for free roaming horses and ask readers to petition the Alberta PC government for protectionist oriented treatment of FRH. Article speaks out against PC government removing horses from the area. http://www.northernhorse.com/blog/index.php/2012/04/18/albertas-pc-government-still-slaughtering-wild-horses/
<p>Tourism/Individual Interest blogs</p> <ul style="list-style-type: none"> • Pictures and personal comments about seeing/experiencing FRH. No overt political agenda. http://zafirei.blogspot.ca/2012_03_01_archive.html
<p>Wild Horse Photography and Art</p> <ul style="list-style-type: none"> • Alberta photographer of local Alberta wild horses http://www.wildlife-expressions.com/wildhorses-openedition2.html • Artist Ruth Moore-through her work shows horses “...living happy and free in the only environment they have known.” http://www.ruthmoore.ca/web/wild_horses.html
<p>Indigenous</p> <ul style="list-style-type: none"> • Horses are spiritually connected to First Nations and are a part of the land and people. The website includes interviews with Nakoda-Stoney Indigenous people and local artist and conservationist Maureen Enns. http://www.galileo.org/initiatives/wildandfree/index.html

One premise surrounding this research is protecting local history and cultural practices while at the same time protecting the ecological foundation so that numerous organisms can coexist. One aspect related to the premise is acknowledging that there are many unknowns about interrelationships in the environment. The broad embedded

philosophy of my research on FRH critically considers why differing social worlds choose to include and exclude FRH in particular arenas.

1.4 Practical Research Outcomes

Little is known about attitudes toward FRH numbers, problems or benefits they contribute, support or opposition for FRH management techniques, and whether FRH are considered animals that are wild, feral, stray or if local people think FRH belong in an alternate category. One objective of this research is to document and record how perspectives on problems, management and classification of FRH vary, apart, between and within interest groups and individuals.

Research dealing with human wildlife conflict (Madden, 2004, p. 251-255) and policy sciences (Clark & Rutherford, 2005) has indicated that the local perspective and inclusion of local people throughout the policy process may be a useful way for policy or management initiatives to be successfully implemented. Aspects from this research that can greatly contribute to policy implementation are:

- Support or opposition from local communities and individuals for FRH management methods
- Local understanding of problems or benefits the horses create for local people
- Local understanding of where FRH fit on the landscape.

Table 1.2 details in greater depth the potential outcomes from this research and helps to identify potential agents, groups and individuals that will be targeted when distributing the results. My focus here is on the practical and applicable aspects. It is my hope that first and foremost the research helps to inform local interest groups and individuals of the

multitude of perspectives that exist toward the horses and also to help explain why these varied perspectives may exist.

Table 1.2: Specific Research Outcomes and Potential Interest Groups

Potential Agents of Interest	Practical Outcomes From Research
AB and Federal Government, NGOs, local interested parties, ‘outsider’ agents (international etc.)	<ul style="list-style-type: none"> -Provide information on potential problems FRH cause. -Provide explanations into why the problems exist from multiple local perspectives. -Provide information on perceptions of FRH populations from multiple local perspectives. -Provide suggestions on specific techniques and future direction for management from diverse local respondents
Target Local Groups and People	Direct Action
Alberta Environment and Sustainable Resource Development (AESRD)*Alberta government dealing with FRH Forestry (local) Cattle Association Métis people of Alberta (Edmonton office) WHOAS (NGO protection group) Burntstick Resort Grand Cache government office Parks Canada Wardens service Priddis/campground AB Trappers Association Outfitters and Tourist organizations providing viewing opportunities	<ul style="list-style-type: none"> -Distribute the summary of results -Provide copy to all participants -Follow up with all of those involved and provide them with a report. Ask for feedback and offer presentations of the results within the communities.
Target local cultural and historic groups and individuals	Direct Outcomes From Historic and Cultural Perspectives
Information centres in Rocky Mountain House, Sundre, Cochrane Métis people of Alberta Museum in Sundre Local schools Reservations	To provide written accounts of local cultural and historic perspectives on FRH for local people to consider and use for educational or personal purposes. Historic data could be used for educational (describing place and people) or tourism purposes by groups interested in focusing on cultural or historic perspectives related to FRH.

*Alberta Environment Sustainable Resource Development (AESRD) was previously entitled Sustainable Resource Development (SRD).

1.5 Local, Historic, Cultural Research Outcomes

The main reason why I chose to position this research locally and to strongly rely on those with frequent and/or longitudinal experience with FRH is because local people either through their support or opposition have the ability to make practical initiatives successful or unsuccessful. I chose to focus on practical experience with the horses because personal experiences are what will most impact where people stand on the issue (Clark, 2002).

Local people who spend time interacting with FRH arguably have the most practical experience with the horses. Locals with a long multigenerational history in the area, especially those who retained some long-established ways of life, are well versed in local history and in detailed information regarding the horses. For example, settler descendents, Indigenous and Métis people in the Grand Cache area historically used and continue to use horse pack trails established by hunters, trappers, original inhabitants, outfitters and natural resource prospectors within the difficult mountainous landscape (Feddema-Leonard, 2007).

Conversely it is not my intent to undermine the experiences of locals who may not possess multigenerational experience but who nevertheless live in close proximity and share land with the horses. I borrow Berkes' description of those who spend time on the land as possessing the "ability to observe the environment in detail, and in some cases monitor day-to-day changes...Many farmers, naturalists, sport hunters and fishers who spend time on the land also have this ability (p. 185)." People who have a history of living and working directly on the land have valuable and practical experiences with FRH

in a contemporary milieu and have much to offer by helping to map the multi perspective temporal geography of the area.

These varied perspectives provide a cultural mosaic, which are according to Clarke (2005), situations that are temporally layered. Many ideologies/values are rooted in the history of the area. The conversation on FRH needs to include local as well as historical perspectives. My goal is to also include local perspectives of those who have been excluded or rarely included in the conversation regarding FRH. I hope to inform policy through documenting accounts from local people who have had and some of whom continue to have frequent interactions with free roaming horses. Including the perspectives of people that may have been ignored or excluded in the past will provide a more complete, democratic and accurate perspective on FRH. I hope the outcomes of this project can be useful, both locally and provincially (see Table 1.2).

1.6 Theoretical Research Outcomes

The chapter following this introduction is dedicated to the theoretical underpinnings of this work. Chapter 2 locates the research in theory and the principles upon which I base this work and is reflexive about the philosophy of science. I briefly and generally outline the theoretical contributions of this research in Table 1.3 as a foreshadow to the full discussion presented in Chapter 2.

Table 1.3: General Theoretical Contributions

Theoretical Contributions
<ul style="list-style-type: none">• Providing one example of a case describing a ‘wicked’ problem and framing it within a holistic, transdisciplinary approach• Presenting the theory encompassing a qualitative approach to human interactions with FRH• Contributing to HWC or human animal interaction research• Aligning with the idea that ‘wilderness’ and what is included or excluded from it is a human concept• Using local knowledge and the contributions of local experts to inform the topic of FRH• Using situational social mapping analysis with the help of three mapping exercises<ol style="list-style-type: none">1.Situational maps (including relational maps)2.Social worlds/arena(s) maps3.Positional maps to analyze and depict relationships and interconnections in the data

1.7 Research Questions

The research output may help reduce conflict in future policy planning and provide necessary historic, contemporary and detailed local knowledge to policy makers, land and wildlife managers, government organizations, NGOs, and back to local communities, interest groups and individuals.

Goals are generally broad, long term, general, and may not be measurable (see Table 1.4). The objectives have a narrow plan, are specific, measureable, short term and include a purpose and target. The questions served as my guide throughout the research process. I define local cultures as those consisting of descendents of local settlers, Métis, Indigenous people, and people with mixed bloodlines as well as more contemporary inhabitants of the area.

Table 1.4: Research Goal, Objectives and Questions

Goal	Objectives	Questions
Inform policy by attempting to describe the perspectives and discourses of multiple collective actors toward FRH in the research area.	<ul style="list-style-type: none"> • To expose local, cultural, historic as well as contemporary interconnections with FRH • To include actors, actants and local perspectives that may have been previously excluded • Use social mapping to describe stories, experiences and knowledge gained by people who share the land with horses through generational as well as personal and practical exposure • Describe and map local knowledge of problems FRH may or may not cause, to describe acceptance levels to possible FRH management methods and FRH classification • Describe meso level discourses regarding FRH including negotiations and conflicts from the mapped arenas and the worlds within them 	<ol style="list-style-type: none"> 1. a) How have local cultures interacted with FRH historically? b) How do multi-generational as well as more recent locals continue to interact with FRH? 2. a) What do local people identify as potential or existing problems, acceptable management options and how do locals classify/frame FRH? b) Why do local, cultural, historic as well as contemporary interest groups vary in their acceptance levels toward FRH? 3. What are the meso-level discourses regarding FRH problems, management and classification and how are the discourses related or disconnected from one another?

1.8 “Subjectivity”, Reflexivity, Transparency and Rigour

As I indicated earlier in this chapter I originally approached the topic of FRH from a pragmatic perspective with clear and specific questions about potential problems, support for management methods, categorization and tolerance levels for FR horse populations. Quickly the topic of FRH became messy and complex. The horses captured

my interest because of their continuing survival on the land as well as because of the (hi)stories and controversy that surrounds them. My understanding of qualitative research increased and also took on a greater role as the project progressed. I began to appreciate in greater detail the impossibility of washing, myself, as researcher, clean of all subjectivity. While the notion of objectivity and impartiality is deeply ingrained in contemporary western science (Mansvelt & Berg, 2010), some researchers have critically questioned the concept of impartiality and objectivity in the research process (England, 1994; Dowling, 2010; Punch, 1994; Sheldrake, 2012). England (1994) argues that the person the researcher is, filters data, interpretations and perceptions of fieldwork; the researcher and their feelings cannot be removed from the person that they are. Dowling (2010) writes that interpreting information and landscapes (personal geographies of respondents) involves subjectivity because our personal understanding of the world helps us to make sense and decipher what we see, hear and read. Similarly, Punch (1994) adds that the researcher is his or her own research instrument because the research is shaped by the researcher's personality, perception of the situation, and interactions with the participants. Personal histories and lived experiences cannot be removed from the person conducting the research, and that is why replicating findings 'objectively' by another researcher is very difficult (England, 1994).

All research is inherently subjective because the researcher chooses specific subject matter that is of personal interest and the researcher has preconceived ideas, feelings and political leanings about the research topic. Subjectivity percolates into all layers of research beginning with the choice of topic and theoretical frameworks, to how the results are interpreted and presented, and into the choices made along the way

(conscious or subconscious) about the inclusion or exclusion of information. I have tried to be present and entangled in my research and to present my subjective self clearly, inclusive of contradictions, and to be transparent, reflexive and honest with my decisions throughout the research process. I define rigour by opening up my work to scrutiny, by making my personal viewpoint, philosophy and theoretical standpoint explicit (Bradshaw & Stratford (2010), addressing the limits of transferability, and using purposeful sampling with thick description (Baxter & Eyles, 1997).

In addition the concept, as used in quantitative research, of reliability in qualitative social science research is problematic as it is extremely difficult to find the identical respondents, and to replicate the temporal historic, political and social mind set of the respondents at the time the interview was conducted (Merriam, 1995; Mansvelt & Berg, 2010). Furthermore, because social interactions are ever changing and fluid no two researchers would have exactly the same interaction with respondents. Thus, in my effort to achieve rigour, I use reflexivity, transparency, thick description, scrutiny by respondents and my supervisor and other embedded checks into the research (Bradshaw & Stratford, 2010; Baxter & Eyles, 1997; Yin, 1989).

I aligned myself with Clarke (2005) in that qualitative data are open to “multiple, simultaneous readings...there is no right reading. All readings are temporary, partial, provisional, and perspectival” (p. 8). Also, all types of analyses are no more than one or several readings of a situation, “an analysis or reading does not claim adequacy or validity...an analysis is what it is understood to be, in all its partialities (xvii)”.

Before proceeding I think it is necessary to define reflexivity and to expand on the interrelatedness of transparency and reflexivity. England (1994) defines reflexivity as

“self-critical sympathetic introspection and the self-conscious analytical scrutiny of the self as researcher” (p. 82). Dowling (2010) defines reflexivity as trying to become aware of where you stand, how and why you are involved, and examining the influence of social relations in your research. Reflexivity is important to the researcher for personal reflection, to strive for accuracy, and to guard against bias based on preconceptions. From the perspective of the reader, reflexivity is important for evaluating and recognizing why and where the researcher chose certain paths. Upon introspection, transparency and reflexivity seem to be closely linked. In order to be transparent one has to engage in some form of reflexivity; if one engages in reflexivity and writes about it, the result is greater transparency. I insert reflexive excerpts from my field journal where relevant throughout the thesis in the hope that the paths I chose are illuminated for the reader.

Transparency in research makes the audience more aware of limitations as well as illuminates the researcher’s position and perspective. Complete transparency is not possible due to influences that are subconscious or that have not yet surfaced but other checks can be implemented into the research design to guide rigour. For example, conscious reflexive writing is a way to explain the research agenda and assumptions and to demonstrate how the researcher believes research results are true (Mansvelt & Berg, 2010). Qualitative writing should be open to scrutiny by participants and the readers; in this effort I applied several checks for rigour (Bradshaw & Stratford, 2010; Baxter & Eyles, 1997; Yin, 1989).

1.9 Personal Reflection on Qualitative Research

My previous research experiences involved the use of quantitative approaches in the form of mail-out surveys. Although my M.Sc. was also in the topic area of HWC, the difference in method and approach made the entire research experience very different. Receiving responses to a survey that I constructed and proceeding to enter the responses into a spreadsheet and statistically analyzing them was challenging but left out much of the human aspect. The answers were simplistic, rigid and compartmentalized. I missed the opportunity to experience the setting and context embedding the answers and for respondents to adequately explain their point of view. Qualitative research, although at times overwhelming, is much messier (less structured and categorized) and the focus is on connections and explanations. I expand on some of these messy components that I have experienced thus far.

I found that being invited into respondents' homes and speaking with them for long periods of time resulted in a much deeper appreciation of their situation in relation to sharing land with FRH. I saw where they lived, how they lived, how much they depended on their environment for their livelihood and why they may see FRH as a threat or why they appreciated the horses on their land. Visiting people at home or in their community exposed geographic as well as personal information on who they are. Speaking to people who were long term residents of the area tied into the history, culture and geography of the land. While visiting people at home, personal aspects of their lives and clues to their personalities are all around and on display.

Meeting the 'participants' and gaining a greater understanding of their point of view was much more insightful than if I had sent out a survey. The explanations that

people provided regarding FRH highlighted concerns for their personal economic, social/cultural, spiritual, and physical well-being. These types of explanations surface best through in-depth conversation. Spending time in the area also gave me a feel for the cultures that make up the area in a way that is not possible from merely reading information.

1.10 Reflexivity on Personal Values

Clark (2002) defines a set of base values such as power, well-being, affection, enlightenment and rectitude that are used by groups or individuals to achieve desired outcomes or situations. As suggested by Clark (2002) I have compared my values against generally observed local values in Table 1.5.

Table 1.5: My Values Compared Against Generally Observed Local Values

Base values	My values measured against local values
Power	My power as a researcher is high because I collect, frame and choose how to present information
Wealth	I am separate from the damage that FRH may cause and the horses do not impact my economic well-being in any way. Some people whom I interviewed saw the horses as a direct threat to their economic well-being.
Enlightenment	Local people are enlightened through practical experience whereas my enlightenment comes from a more detached, learned and institutionalized knowledge
Skill	I have limited skill with horses and with life in rural areas. My skills rest in academic areas dealing with designing research, philosophy and higher level thinking. Local people may also possess skills similar to mine however many that I interviewed have in-depth experiences with living on the land.
Respect	I respect the local people and their opinions. I am especially grateful to all who opened their doors and welcomed my lengthy conversations. I have respect for the history of the area, for nature and for animal rights.

Base values	My values measured against local values
Rectitude	I feel morally indebted to those who were honest and open with me during the interviews. My first moral obligation is to those who participated and who openly shared their concerns (for and against FRH) with me. My second moral obligation is to the horses which, I believe, play an important part in the social and physical landscape of the area
Well-being	FRH do not directly affect my well-being but they do impact local human populations both negatively and positively. I am acutely aware that my research may affect the future well-being of the horses and indirectly local people.
Affection	I do hold affection for animals. I do share this affection for the horses in common with some respondents but not with others.

Value orientations place values into a context where values are arranged into categories to describe human relationships with wildlife (Zinn, Manfredo, & Barro, 2002). Domination and mutualism are two contrasting examples (Manfredo, Teel, & Zinn, 2009). Domination or mastery consists of value orientations leaning toward various degrees of human mastery over wildlife. The stronger the mastery orientation the more likely human welfare takes precedence over that of the animal. Those with mastery or domination value orientations tend to support actions involving intrusive control and death of animals and the treatment of wildlife is evaluated in utilitarian terms. Mutualism value orientations view life forms as having rights deserving care and compassion. People who are mutualism value oriented are more likely to engage in welfare behaviours such as feeding, nurturing, helping hurt or abandoned animals and are less likely to support harm or death to animals. People who are mutualism value oriented also often view wildlife as being similar to humans with human characteristics and with personalities. I identify most closely with mutualist value orientations toward wildlife and more specifically toward FRH although many caveats rest in the crevasse of such a broad generalization.

Other basic values toward wildlife have been identified by Kellert (1996) as utilitarian, naturalistic, ecologicistic-scientific, aesthetic, symbolic, humanistic, moralistic, dominionistic, and negativistic (Table 1.6). Opposing values can cause conflict between groups (Manfredo, 2008). Those involved in historic activities that used horses for forestry, mining, outfitting, hunting and land exploration for oil expressed some utilitarian values. The Métis and Indigenous people I spoke to also expressed some utilitarian values (outfitting, trapping, hunting). However symbolic, naturalistic, humanistic and aesthetic values were also present throughout our conversations, especially in Indigenous and Métis stories/interviews. In line with situational analysis and postmodern thought I believe values are not linear, closed, siloed and always one sided. Nevertheless using the categories created by Manfredo (2008) I identify most strongly with humanistic, naturalistic, moralistic, aesthetic and ecologicistic-scientific values dealing with nature and wildlife. I share naturalistic, humanistic and aesthetic values with people in the area. I do not strongly identify with utilitarian values whereas many people with long term experience with FRH do.

Table 1.6: Basic Values Dealing with Positions on Nature and Wildlife

Value	Definition
Utilitarian	Practical and material exploitation of nature
Naturalistic	Direct experience and exploration of nature
Ecologicistic-Scientific	Systematic study of structure, function, and relationship to nature
Aesthetic	Physical appeal and beauty of nature
Symbolic	Use of nature for language and thought
Humanistic	Strong emotional attachment and “love” for aspects of nature
Moralistic	Spiritual reverence and ethical concern for nature
Dominionistic	Mastery, physical control, dominance of nature
Negativistic	Fear, aversion, alienation from nature

I started out with a protectionist outlook toward the horses. My path expanded as I began to empathize with people, their stories and their lives, some of which supported the horses while others opposed them. Transparency and academic integrity are most important to me because I wish to reciprocate the respect, trust and openness that so many respondents demonstrated toward me. I realize that not all respondents will agree with how I frame the research but it is my most sincere hope that I extend the same respect and openness that so many extended toward me. Academic integrity to me is defined by representing all perspectives fairly and truthfully even when my personal viewpoint may differ.

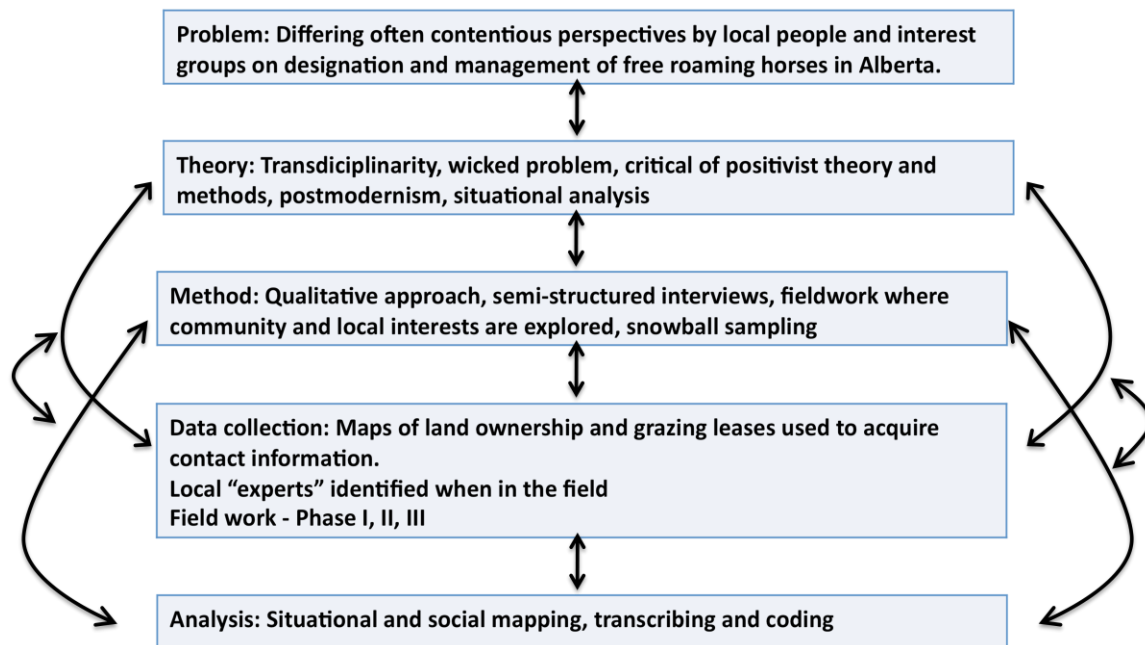
I conclude this chapter by providing a brief outline of the organization of the thesis.

1.11 Thesis Outline

The organization of this thesis at first glance many come across as structured in a fairly traditional format consisting of an introduction, theory, methods, results and discussion sections, however, the results which include compositions of narratives, stories, accounts and experiences are incorporated throughout the dissertation and not merely limited to the discussion sections. Theory, method, data collection and analysis are interdependent and feed back into one another (Figure 1.4). I found it cumbersome to separate background information from the people who are woven into its fabric. I prefer to identify background information as an integral part of the research. Baxter (2010, p. 85) and Clark (2002, p. 118) corroborate that context is an interwoven part of the research and not merely disconnected background information. The background

information consisting of historic, socio-cultural as well as non-human geographical elements underpins the overarching research on FRH and contextualizes the positions presented by local people. Without context or background information the results would be disjointed and meaningless.

Figure 1.4: Interdependency of Theory, Method, Data Collection and Analysis.



In Chapter 2 I expand on the theoretical background that underpins this research. I explain why FRH are a wicked and complex topic and how postmodern situational analysis is well equipped at dealing with wicked complex topics. Furthermore the theoretical benefits of situational and social mapping are interwoven into the discussion and applied in relation to academic disciplines related to the research. Stemming from a discussion on complexity I explain why situating research on FRH within a transdisciplinarity setting is a good fit and I draw on the complementary connections to

geography. Once the scientific ontology (how the world is perceived) is outlined, experts and the place of science are further tailored to research specifically addressing FRH.

In the third chapter I discuss the background information embedded in social mapping that changed over time and continues to change and impact FRH. In qualitative research, context is definitive and an ongoing part of the research instead of being treated as separate background information. Keeping in spirit with this philosophy, contextual information is presented throughout the thesis and when relevant to the discussion. Discussions involving context throughout the thesis are fluid and overflows from one chapter to the next. The discussion in Chapter 3 involves scientific literature, local industry, the evolution of federal and local laws, and local socio-cultural perspectives all through the use of social maps to display and analyze relationships (Clarke, 2005).

The focus of Chapter 4 is on methodology and builds upon the theoretical background from Chapter 2 by describing the practical aspects of the research. Chapter 4 includes descriptions of the evolution of the questionnaire, timelines, schedules, descriptions of those who participated, why and how those involved were selected, and the general logistics of the research. I address the difficulty of adapting interviews to accommodate diverse perspectives. Settler descendents, Indigenous and Métis perspectives required adjustments to the questionnaire and scrutiny on how to present, collect and interpret data. I also discuss challenges in the field and the epistemology or the relationship between myself, the researcher, and the people I interviewed. Lastly, I address data transcription, organization and coding specifications.

Chapters 5, 6 and 7 deal with results and the discussion of the results framed within situational analysis. Chapter 5 opens with a theoretical and applied discussion of

local knowledge and experts and ties that discussion to knowledge and wisdom. The next section describes local positions on horse timelines, ancestry, phenotypical characteristics and classifications. Chapter 6 presents reported FRH benefits and problems and local knowledge of predator-prey relationships. The last results based chapter discusses FRH management options and related suggestions. In Chapters 6 and 7 I incorporate a mix of descriptive and short tabulated results to specific and open ended questions. I strive to display results pictorially, through maps and figures, as frequently as possible.

Chapter 8 concludes the research and provides last thoughts on research and local knowledge. Research questions are revisited. General and future recommendations on FRH management are offered. I conclude with recommendations for future research and a few words on setting the direction for upcoming policy on FRH.

CHAPTER 2: THEORETICAL BACKGROUND

The theoretical chapter presented here is divided into two broad sections. I start by describing wicked problems and provide support for approaching human-FRH interactions qualitatively. The second section illustrates the theoretical framework with the help of a map that leads a written description of theory and the philosophical position of the research.

2.1 Wicked Problems and Qualitative Research

2.1.1 Wicked Problems

Wildlife or animal management often includes perspectives from diverse worlds and arenas. The various and often conflicting perspectives toward FRH can be termed as complex, messy and wicked. FRH are messy to categorize because some interest groups or individuals view them as an integral part of the land while others view them as an introduced species, which brings little benefit or even harm to the area that they occupy. Within this dualism exist a myriad of other perspectives toward the horses and their place or lack thereof on the landscape. I would argue that rather than being a biological problem, FRH are primarily a political problem, between people, because the conflict lies between various interest groups and individuals with numerous and at times opposing perspectives and values toward the horses. The complexity of the problem can be characterized, at least partially, by these opposing perspectives existing in an ever-changing open system where concepts such as knowledge, experts, and complexity require careful consideration.

FRH can be described as a wicked problem because the problem is complex, open, and involves multiple actors and informants. Wicked problems require holistic approaches well versed in dealing with complexity. Through the use of situational analysis I employ an approach that helps address complex problems and speaks to the FRH problem as a whole (Brewer & Clark, 1994, pp. 392-394). I strive for an inclusive approach that recognizes alternative ‘non-scientific’ experts as knowledgeable. Complex problems require drawing on contextualized connections and exposing relationships in a broad open system and this is well suited to qualitative approaches.

Qualitative research is well matched for providing explanations for higher order questions that attempt to answer the ‘why’ issues found in wicked problems. At the same time post modernist perspectives strive to answer descriptive (what) type questions. Qualitative approaches are generally comfortable with flexible definitions of experts and knowledge; they may help in expanding our understanding in order to find improved outcomes to the conflicts between interest groups regarding FRH.

Rittel and Webber (1973) assign properties such as ill-definition, ambiguity, and lack of an apparent solution to wicked problems. Various authors highlight different aspects of wicked or complex problems, however, Rittel and Webber (1973) provided the groundwork for defining properties of wicked problems; key points (see, in particular points 2, 4 and 7) are summarized in Table 2.1. In addition, little scientific agreement exists on the geography of FRH (where they came from, how many, where they belong) and their impact on the environment and on wildlife (Table 2.1, point 7).

Interest groups use fragments of ‘science’ to support their position; however, as LaChapelle and McCool (2005) suggest, incomplete information often is ongoing and

continues to exist. Understanding multiple perspectives of involved social worlds and how the worlds use information to frame the problem may be more advantageous to finding ‘better’ solutions. Few studies specifically address FRH in Alberta. Examples of disputed points with various levels of scientific backing (Table 2.1, points 2, 7, 10) include whether FRH are a wild or introduced animal, whether FRH are destructive or beneficial to the local environment, whether FRH are a local heritage animal worth preserving, and whether FRH compete with wildlife. Politically concerned groups or individuals are likely to choose information that supports their viewpoints best (Table 2.1, points 7, 8).

Table 2.1: Traits of Wicked Problems and Examples of their Relationship to FRH

Traits and Definitions of Wicked Problems	Relationship to FRH and/or Suggestions on how to Address Wicked Problems
1. The information needed to understand a wicked problem depends on one’s idea for solving it (A). Wicked problems are difficult to define because incomplete information will always exist (B).	Different positions presented from respondents on problems FRH cause or the benefits FRH contribute.
2. There is no final solution or permanent settlement to wicked problems (A, C).	Ongoing renegotiations of political power between actors can be exposed through highlighting connections and by providing explanations.
3. Solutions to wicked problems are better or worse (A).	Qualitative research including in depth interviews and social mapping analysis to help explain local values and perspectives toward FRH may lead to ‘better’ decisions and provide ‘better’ solutions.
4. Solutions generate waves of consequences over time (A). Key parameters of the problem change over time (C).	Decisions or a lack thereof regarding FRH have had consequences over time (e.g. fences were built, land partitioned, tracks of land ‘protected’ in a way that did not consider local and traditional use of the land and horses, government tried to eliminate horses while some interest groups sought to protect horses).
5. Every wicked problem is essentially unique (A).	The area is unique because no other geographical area with FRH has the same vegetation, geographic features, interest groups, local inhabitants, cultural perspectives, historic and cultural uses of the horses. This is where specific context driven research is beneficial.

Traits and Definitions of Wicked Problems	Relationship to FRH and/or Suggestions on how to Address Wicked Problems
6. Every wicked problem can be considered to be a symptom of another problem (A). Solutions exacerbate other problems (C).	Gather information from people who are directly impacted by problems connected to or caused by FRH. Include perspectives from numerous interest groups to get a holistic appreciation of the problem(s).
7. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution (A). Wicked problems include multiple competing values and goals (B). Stakeholders define the problem differently (C). Little scientific agreement exists on cause-effect relationships (B).	The political landscape of acceptance levels of FRH on the land has changed over time. The AB government tried to unsuccessfully eliminate all FRH in the 1920s (AESRD, 2014a) some people were opposed and NGOs, to protect the horses, were formed. Indigenous respondents value FRH because of cultural and historic significance while one respondent from a large cattle business on a large area of land views FRH as competition for forage and a nuisance.
8. There are structural inequalities in access to information and to the distribution of political power (B).	My research includes viewpoints of groups and people who may not have been included in the past. It appears that certain interest groups may not be involved or even considered during the policy process regarding FRH. The importance of including local people and interest groups has been established by authors such as Howitt and Stevens (2010, p. 55).
9. One problem with attempting to find solutions to wicked problems is limited time and resources (B).	
10. The aim is not to find the truth but to improve some characteristic of the world (A).	Focus is not on 'truth' but on description and problem solving. On one hand, horses may be historically, culturally and potentially biologically significant to the area and on the other hand, FRH may compete or even prove detrimental to wildlife, cattle and other land uses.

A=Rittel and Webber (1973), B= Lachapelle & McCool (2005), C=Balint (2007)

FRH constitute a unique, contextual problem occupying a geographically and historically distinct area. Problems regarding FRH align with definitions of wicked problems in several ways, as highlighted in Table 2.1. Given the traits and tenets of wicked problems, interested parties may never completely agree on where or how FRH

should be situated on the landscape. However knowledge from local people may help decision makers find, improve and implement practical solutions.

Another aspect of a wicked problem is that the ‘solutions’ have consequences over time and that no final and definite solution exists. Interest groups continue to define the problem differently and as a result may not agree on the framework and information used to understand or solve the problem. If careful consideration is given to different points of view it may be possible to find common ground between interest groups or to build upon the different realities that people embrace (Kellert, 1994, p. 382; Clark, Reading & Clarke, 1994, pp. 419-420; Clark, Curlee & Reading, 1996). At a minimum, the reasoning behind different points of view may be exposed and can help in building an understanding between interest groups/individuals and/or between interest groups and government.

2.1.2 Qualitative Approaches and Trying to ‘Solve’ Wicked Problems

Qualitative research is concerned with explaining “human environments, individual experiences and social processes” (Winchester & Rofo, 2010, p. 3). Qualitative research also emphasizes multiple meanings of events, places and experiences of individuals that may highlight a fluid reality (Winchester & Rofo, 2010, p. 7). FRH in the research area are a part of a rich history linked to Indigenous people, settlers and their descendents as well as to people with various spectra of Métis bloodlines. The history and perspectives of the people living in close proximity to FRH are often overlooked when making policy decisions. Potentially, qualitative research can provide a voice for marginalized people and for their (his)stories. Local perspectives provide explanations

that may aid in building commonalities among differing perspectives. Building on commonalities and understanding local perspectives is advantageous because it helps inform policy from numerous and local positions which are vital for policy success. Qualitative methods may be well positioned to research wicked problems by providing answers to questions that are complex and require explanations (Luks & Siebenhuner, 2007; Lawrence & Despres, 2004; Sheldrake, 2012). Wicked problems have no rules or classification systems. Rittel and Webber (1973) indicate that wicked problems require rich modes of reasoning. Contemporary proponents of qualitative approaches discuss similar claims in greater detail (Sayer 1992; Harre, 1986; Mitchell, 1983). Alternatives such as focusing on process, including small numbers of cases, exploring relations of connection, studying individual agents or groups in causal contexts and looking for causal explanations of events have been applied in qualitative research.

Representative sampling and making generalizations is problematic in human-free roaming horse interactions research. Can a sample ever be truly representative of a diverse human population? For example, ‘mountain people’ in the Grand Cache area are few in number but occupy and traverse large areas through traditional horse pathway systems. If, for example, mountain peoples’ perspectives were excluded, insights and perspectives that are area specific and that directly affect and contribute detailed information to understanding human conflict or benefits associated with FRH could be lost. In other words we could lose much of the meaningful information in an effort to generalize and dilute marginal, local, detailed, and varied perspectives.

Generalizations are defined as simple and as seeking regularities and common properties (Sayer, 1992). My research on FRH is not looking to make generalizations that

try to quantify if for example, **most** Albertans view FRH numbers as too large or too small. Rather, I am focusing on explanations to try and deepen the discourse on FRH, their perceived localized numbers over time, why FRHs are seen as too few or too many, or for examples and explanations of problems from local people and shared experiences and connections people have (had) with the horses. Generalizations are good at producing statistics on certain characteristics, but drawing explanations from generalizations can be uncertain because the focus is not on providing in-depth reasoning (Winchester & Rofe, 2010). Qualitative approaches concentrate on explanations, not generalizations. Qualitative information that deals with processes, activities, relations and episodes of events and is well suited to provide explanations. Thus, using detailed local knowledge to explain human FR horse conflict seems to be a more informative and meaningful approach to understanding local human horse interactions and upon which to base effective policy initiatives.

The process in qualitative research may be generalizable under very similar relationships but representative sampling and typical cases are not part of the underlying philosophy or practical application in qualitative or case study approaches (Mitchell, 1983). The more an object is closely related to other objects, the more likely it will vary across time and space and not be generalizable to a population (Sayer, 1992). Issues surrounding FRH are geographically specific, people specific and social context specific, which makes generalizations difficult. However, in addition to the goal of improving policy decisions, there are potential aspects or lessons to be learned that may be transferable to similar cases.

As a final note, context is often provided simply as background information, while context is central to and part of the explanation in qualitative research. Context focused approaches explore how the context is structured and how participants fit into and interact within that context. Clark (2002) states that “all things are interconnected and that the meaning of anything depends on its context” (p. 29). I move forward with full contextualization with flexible comprehensive methods that bring together incomplete systems, incomplete data and moving targets. Broadening, bridging and combining approaches and methods from a variety of disciplines and incorporating local knowledge and experts may be needed to contextualize and fully understand the reasons for existing conflicts between humans and FRH.

My research focuses on connections, including history and geography within the context of free roaming horses. Contextually exposing connections between and among free roaming horses, local people, the land and politics can help in understanding and answering higher order, complex questions. In addition to documenting/describing FRH history and connections between people and the land, stories and values of local people toward FRH may help inform policy direction and decisions. Successful FRH management plans require local acceptance and buy-in. Understanding the complexity of past and present relationships among local people and FRH may result in an informed, well thought out and successful policy/management plan (Howitt & Stevens, 2010, p. 55).

2.2 Theoretical Perspectives

In response to qualitative approaches being well suited to deal with humans and free roaming horses I turn to theoretical conceptualizations described in the following section.

2.2.1 *Situational Mapping*

I use social mapping (i.e. situational analysis by Clarke 2005) that deals with both historical and contemporary materials and is based upon cartography (drawing of social maps), relationality (relationships between and within worlds and arenas, relationships between respondents) and positionality (positions taken by actors and groups through discourses and qualitative interviews). My understanding and application of social mapping is based on Clarke's (2005) mapping exercises depicting situations, social worlds and arenas and positions. As Clarke suggests, such maps are framing devices that show key actors, actants, social worlds and arenas, discourses, conflicts, as well as highlighting missing actors and discourses. The larger arenas contain smaller worlds. Worlds are more specific than arenas while arenas are longer lasting and more static than worlds (Table 2.2). Mathar (2008) defines social worlds and arenas in section 3.2 in the following way:

The difference between social worlds and social arenas is basically that worlds are narrower in scope—there are several social worlds (i.e., collectives which participate in the same discourse or, to describe it simply, a number of people acting together) within one arena.

Smaller ellipses reflect a lesser role in my work while larger ellipses depict more important or relevant aspects. I have also tried to place closely related aspects within close proximity to one another and to use space as an indicator of conceptual separation.

Table 2.2: Characteristics of Arenas and Worlds

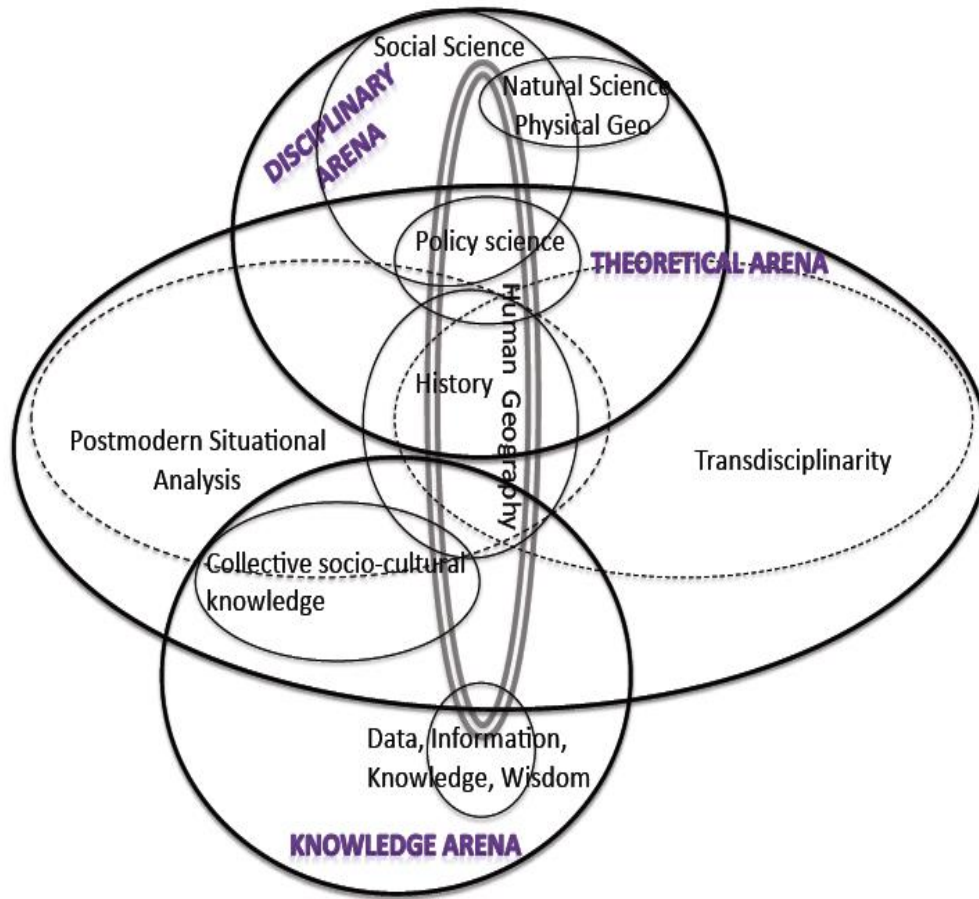
Arenas *(definition in quotation above)	Worlds *(definition in quotation above)
Bigger. Worlds exist as part of one or more arenas.	Multiple worlds exist at once-no single one world or one society
Fully or partially contain various worlds	Exist within one or multiple arenas
Long standing and enduring for a long time	Some worlds are shorter in duration others are longer lasting, always reproducing and changing through discourses
Multiple arenas are usually presented in a single map	
Layered discourses occur with complex perspectives and commitments that may differ, arenas are often sites of controversy.	Social worlds are complicated and constructed through other's discourses as well as producing their own. Disagreement within one single world is possible
Arenas combine older, newer and temporal components in ongoing contingent practices.	
Arenas contain complicated social worlds that are constructed through other's discourses as well as producing their own discourses.	
Arenas analyze the heterogeneous perspectives to see power at a meso organizational level analyzing collective actors which translate into social worlds.	Power flows through, is continually produced and re-produced, fluid, subject to change

Situational analysis that includes both theory and methods is based upon mapping exercises that emphasize linkages and relationships by questioning and analyzing arenas and the worlds that the arenas contain. I have organized the second section of this chapter around a theoretical map that shows the relationships among disciplines framing the FRH issue, relevant theories and the theoretical and applied role of knowledge. Although I do not use this particular map for analysis of data, I found the map to be an effective visual

tool for showing relationships among the theoretical positions that I take throughout this project. I used the map to organize this section, starting with a discussion of pertinent disciplines and the debates that surround geography in particular.

Transdisciplinarity and the theory behind it is directly related to a discussion of the role of disciplines in my research. Turning to more practical applications of theory I move into a discussion of postmodernism, situational analysis and to a lesser degree policy sciences. The map displayed in Figure 2.1 provides an introspective look into the epistemology/ontology from which my work emanates. Figure 2.1 is a social map that is as much a reflexive tool for me, the researcher, as it is a theoretical guide for the project. The larger (bold) ellipses are the arenas and the smaller ellipses within the arenas are worlds.

Figure 2.1: Theoretical Social Map



My standpoint is that of a human geographer and social scientist (hence the double lines around human geography in Figure 2.1). I hold this standpoint because I believe various social sciences are at the root of my research topic. Inadvertently my thinking aligns with an emerging theme of the 2015 AAG annual meeting titled, “Radical Intra-disciplinarity” that speaks to the un-disciplined nature of geography and embraces the use of diversity in tool kits, methods, theories and ways of knowing.

Physical geography informs the biological details of FRH in the research area. Along with human geography and the social sciences, theoretical perspectives drawn from the policy sciences play a role in my work. Within the theoretical arena are

contributing concepts including human geography, history, transdisciplinarity, policy science and situational analysis. The theoretical concepts are elaborated upon in the following sections. Postmodern situational analysis and transdisciplinarity are the two largest theoretical ‘worlds’ that I draw upon and they permeate into other related worlds and arenas (hence the dotted lines used to represent them in Figure 2.1). The knowledge arena consists of collective socio-cultural knowledge, which stemmed from literature on local knowledge (LK) and traditional ecological knowledge (TEK) (see section 5.1). I place the data, information, knowledge and wisdom (DIKW) world mainly outside of the theoretical arena because it is less concerned with questioning underlying ‘scientific’ theoretical assumptions (see section 5.1.3 and Figure 5.4).

2.2.2 Knowledge Arena

The knowledge arena is dealt with in depth in section 5.1. Knowledge and the information that is included in any discourse speaks of who and what type of information is valued. Transdisciplinarity thought points to the importance of incorporating and collaborating with non-academic sources of knowledge. In light of this, and situational analysis which through social mapping directly includes various sources of local knowledge and information, I have tried to include knowledge and information that reaches beyond traditional academic discourse. Local publications (Feddema-Leonard, 2007) and local web sites (Henderson, n.d.; Manitoba, 1997) as well as local expert knowledge (Galileo, n.d.) are positioned side by side with academic literature.

2.2.3 *Disciplinary Arena*

Disciplines often have specific theoretical standpoints that are commonly used within the particular discipline. Disciplines may or may not share and understand theories or theoretical standpoints in similar ways or they may not share similar or come at them very differently. For example the discipline of history tells stories and is not concerned with subjectivity in a way that the physical sciences may be. Subjectivity is considered part of science by some human geographers as well as by the policy sciences. Theoretical perspectives such as those held by postmodernism and transdisciplinarity also welcome subjectivity as an active part of science rather than something to suppress, guard against and eliminate.

Theories are used across disciplines and are often molded to the discipline that is using the theory. One familiar example to a human geographer may be sense of place theory. Geographers use sense of place theory and focus its use on human attachments to place(s) while biologists explain sense of place from an evolutionary perspective (people favour certain places over others because it enhanced survival and reproduction). Social scientists on the other hand, may focus on how people construct, value and hold certain attitudes toward places they are attached to (Farnum, Hall, & Kruger, 2005). It is apparent, that how theories are used is not only subjective from a personal understanding of them but also from the disciplinary interpretation that exists within disciplinary confines.

Disciplinary theoretical interpretation is well depicted by looking at the disciplinary arena on the social map. Disciplines are part of a larger arena because they share some common goals (advancing knowledge) and perspectives but each world or

discipline in this case, may have contradictory or differing points of view on particular theories or methods. Each discipline has deeply rooted traditions, worldviews and conceptual structures which were and continue to be historically and politically influenced (Manitoba, 1997; Newell, 2001) and that may contradict or present different discourse than another discipline. Theories such as sense of place theory may be used by many disciplines while not belonging to anyone discipline. This coincides with the postmodernist and transdisciplinary idea that specific theories do not belong to any one discipline but can and should be used by research that complements the theory best.

Disciplines that traditionally best explain the *how* (how FRH got there) the *when* and the *where* in FRH research are history and geography. Geography and history are the overarching umbrella disciplines in addition to disciplines such as sociology, psychology, and Native American studies that socially also inform FRH management. I heavily rely on geography, history and generally on the social sciences. Geography and history help to explain the geographical locations of Indigenous people and of European settlement that dispersed the horses over time. History also sets the social context of how horses were viewed and used in the past. The influence that horses had on Indigenous populations is relevant and temporally parallel to European settlement. However Indigenous populations had very different cultural ideology, socio-cultural uses and settings regarding FRH. Social explanations of meso-level (not individual or highly organized large groups) worlds, communities and interest groups and their discourses rely on social explanations enveloped by social science theory (such as grounded theory) belonging in the disciplines of sociology, human geography and to some extent psychology.

On a less transparent level, economics (and money distributed by those in power decision makers-government) determine how much is allocated to FRH management and politics determine who makes decisions regarding FRH and why. Lastly, both natural sciences and social sciences inform the FRH issue (Russell, Wickson, & Carew, 2008). From an overt social perspective local people and their contributions and support are necessary to make any animal policy program successful. Looking deeper, social processes guide all decisions and the power to make and implement such decisions depends on meso-level discourses between and among people. The physical/natural science perspectives that I select and focused upon are also a part of specific worlds and arenas and they reveal situations that are at times contradictory. Contradictions create sense and meaning between and among worlds, contradictions also separate and define arenas and the specific worlds within them.

Physical perspectives are necessary because environmental processes, ecology and biology of the species provide information to integrate into solutions and elements of the potential policy/management plan. Despite the usefulness of the mentioned disciplines what is needed is a way to move between, within and beyond disciplines when contending with a broad and deep topic such as that of FRH. This is where transdisciplinarity and situational analysis are most useful theoretically and practically.

2.2.4 Theoretical Arena

The following section expands upon concepts related to the theoretical arena. The pillars that uphold theoretical thought behind this research are transdisciplinarity, postmodern situational analysis and, to a lesser degree, policy sciences. To reiterate,

transdisciplinarity is all encompassing of the disciplines described above as well as accepting of local non-disciplinary practical knowledge and as a result is better equipped to explain diverse wicked problems. Situational analysis is embedded in postmodernist thought and provides the mapping and practical layout for displaying, describing and executing research. Lastly, the policy sciences, although focused only on informing policy, provide related practical and theoretical concepts.

2.2.5 Transdisciplinarity

Advocates of transdisciplinarity reject boundaries of disciplines (but not disciplines themselves), recognize a need to transcend existing dualisms within and between disciplines, and see a necessity to form a new view of science (Nowotny, 2003; Luks & Siebenhuner, 2007; Russell, Wickson, & Carew, 2008). I question the limits of disciplinary boundaries and welcome different philosophical and methodological approaches to dealing with complex topics.

Complex wicked problems have not been well understood by specialized, reductionist, and fragmented approaches. Compartmentalization of knowledge and division of responsibilities in society is blamed by Pohl (2005, 2008) for our inability to deal with complex environmental problems. Understanding complex topics such as human FRH interactions requires more than the traditional view where specialization and technology continue to push science forward into increasingly subdivided areas that few understand. I am not proposing an end to specialization, what I am proposing along with Kessel and Rosenfield (2008) and Russell, Wickson & Carew (2008) is balancing hyper specialization with more generalist approaches that would open up understanding and

potentially generate cross fertilization across disciplines. Russell, Wickson & Carew (2008) sum up this point by stating that “[i]ntellectual capacity is most useful when it spans many areas of knowledge, including those that are not currently in vogue, and when it displays depth and breadth....” (p. 469).

Highly specialized and fragmented disciplines may not provide answers to complex problems. The sole focus on specialized areas of study has the potential to increase fragmentation and to lead to elitism in knowledge and understanding. Furthermore, elitism in knowledge and understanding may result in public mistrust of ‘science’. In academia as well as in the general population, mounting skepticism of a single methodology in science has gained traction (Luks & Siebenhuner, 2007; Sayer, 1984; Neumann, 2005; Kidner, 2000; Nowotny, 2003; Burnett, 2005; Russell, Wickson, & Carew, 2008). An argument against reserving knowledge for the ‘experts’ is that ‘scientific’, messy endeavors such as those dealing with environmental issues may require public buy-in and the democratization of science (see local knowledge section). Nicolescu (1999) sums up scientific or knowledge democratization by stating that

Universal sharing of knowledge - a necessity of our world - cannot take place without the emergence of a new tolerance founded on the transdisciplinary attitude, one which implies putting into practice transcultural, transreligious, transpolitical and transnational visions.” (p. 7).

Geography is a broad and far-reaching discipline, which covers many topic areas that often cross over and borrow from other disciplines. Some argue that geography’s broad scope, loose disciplinary unity and contentious dualisms will lead to further fragmentation of geography as a discipline (Harrison, Massey, Richards, Magilligan, Thrift, & Bender, 2004; Massey, 1999; Thrift, 2002). The physical-human divide, for example, has been identified as a problem for the discipline of geography. Over time

physical and human geography continued to differ in methodological approaches and in the philosophies of science that provide the basis for these approaches. Increased specialization in physical geography's methodology through the advancement of GIS and remote sensing, for example, have pushed some physical geographers toward the 'hard' sciences and into a separate specialist niche altogether. Furthermore, contemporary changes to geography such as the split of environmental science into its own discipline has contributed to further fragmentation within Geography (Thrift, 2002).

Transdisciplinarity coupled with situational analysis is one way to transcend divides between physical and human as well as humanities based disciplines (and ways of collecting and including information) and to freely explore FRH from various disciplinary and local knowledge perspectives. I am getting ahead of myself here so let me start by defining transdisciplinarity and providing a brief discussion of how it relates to disciplinary perspectives.

2.2.5.1 Defining Transdisciplinarity

Intradisciplinarity is the most conservative disciplinary concept where one works within a discipline and its boundaries, respects disciplinary traditions and the discipline's established epistemology and ontology (Burnett, 2005; Manitoba, 1997).

Multidisciplinarity, interdisciplinarity, and transdisciplinarity can be placed on a continuum of increasing freedom from disciplinary boundaries and promoting the sharing of ideas from differing disciplines. Multidisciplinarity, interdisciplinarity and transdisciplinarity are mutually complementary and often cross over disciplinary boundaries; as a result, the terms are often used interchangeably but there are significant

differences to consider. Nicolescu (1999) defines multidisciplinary, and interdisciplinary in the following ways:

Multidisciplinary concerns studying a research topic not in only one discipline, but in several simultaneously...Blending the perspectives of several disciplines will ultimately enrich the topic in question. Moreover, our understanding of the topic in terms of its own discipline is deepened by a fertile multidisciplinary approach... the multidisciplinary approach overflows disciplinary boundaries while its goal remains limited to the framework of disciplinary research. Interdisciplinarity has a different goal from multidisciplinary. It concerns the transfer of methods from one discipline to another (p. 2).

On the farthest end of the continuum lies transdisciplinarity, a concept still in its infancy in North America. Nicolescu (1999) writes on transdisciplinarity in the following way, “As the prefix ‘trans’ indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. Its goal is the understanding of the present world, of which one of the imperatives is the unity of knowledge” (p.2).

Burnett (2005) defines transdisciplinary research as:

research that has no immediate links to a particular set of subjects or disciplines. Rather, it draws upon what many disciplines do in order to find its content and methodology at the nexus of a variety of approaches...There is a built-in contingency to every research direction and a felt sense of discomfort with programmatic assumptions. At the same time, the orientation is to look for connections among a variety of areas that may otherwise not recognize how they are pursuing similar research and practical agendas” (p. 1).

The most succinct definition comes from Russell, Wickson and Carew (2008):

In contrast to multidisciplinary—in which disciplinary specialists work together maintaining their disciplinary approaches and perspectives—and interdisciplinary—in which areas of overlap or intersection between disciplines are investigated by scholars from two or more areas—transdisciplinarity has been described as a practice that transgresses and transcends disciplinary boundaries (p. 460).

As discussed by Quinlan and Scogings (2004) there is a need to move beyond

multidisciplinary perspectives because this approach consists of each discipline only contributing their own perspective on the issue. Those involved in multidisciplinary approaches do not talk to one another nor integrate research methods. Interdisciplinary approaches integrate methods from other disciplines but do not question disciplinary boundaries, conceptual structures, ontology, epistemology or methods of inquiry.

Transdisciplinarity answers a call to make sense of knowledge that is becoming increasingly fragmented and specialized with an intensifying lack of unity and purpose (Burnett, 2005; Nowotny, 2003). The charter of transdisciplinarity is based on the following, among other, prepositions: that objectivity cannot be achieved, that dialogue and reconciliation between disciplines is needed, that new data and new interactions are needed between disciplines, that a goal of transdisciplinarity should be to open all disciplines to what they share and to what lies beyond them, and that there needs to be acceptance of different levels of reality (deFreitas, Morin & Nicolescu, 2009).

Postmodern situational analysis would appear to be in agreement with many of the above prepositions of transdisciplinarity with the exception of a focus on what disciplines share. Rather the focus in situational analysis is on differences and searching for what is missing, less obvious or excluded and then proceeding to question why that may be. In regard to accepting different levels of reality, situational analysis maps help to reveal some of the different levels of reality, although not all the levels of reality are present.

Both theories address reflexivity and the difficulties with accepting objectivity. My research process on FRH involves reflexivity and, as expanded upon in the first section of this chapter, questions objectivity and its usefulness. The way that I frame FRH research and theory and apply methodology demonstrates that a single disciplinary approach is, in

my understanding, not adequately positioned to deal with FRH and human interactions. I concur with Nicolescu that: “Transdisciplinarity is nevertheless radically distinct from multidisciplinary and interdisciplinary because of its goal, the understanding of the present world, which cannot be accomplished in the framework of disciplinary research” (Nicolescu, 1999, p. 3).

2.2.5.2 Postmodernism, Situational Analysis and Transdisciplinarity

Postmodernist lessons of which I am aware of are to celebrate differences and to refrain from fitting data and research into predetermined compartments. On the extreme end of postmodernist attitudes is the refusal of order and the denial to search for commonalities or relationships. Although I part with postmodernism before this revolutionary front I take away the lesson to observe and search for differences, chaos and to embrace the messy parts in research. In disregarding aspects of information by forcing messy information into organized rigid compartments much can be lost.

Transdisciplinarity and postmodernism agree on erasing some boundaries among disciplines, moving beyond the restrictions placed on research by disciplinary boundaries, and transversing the divisions of specialty. Both agree that dividing research into predetermined and restricting categories is counterproductive to understanding the present world or more specifically, from my perspective, FRH. The difference between transdisciplinarity and postmodernism lies in what researchers do with these categorizations. Post(modernist) disciplinarians may possibly focus on the differences and why they exist while transdisciplinarians may possibly draw from the disciplines and then move beyond them to study their research ‘problem’ or topic (without the

restrictions imposed by the disciplines). Disagreement comes into play when the greater goal is to find what we all share, what lies beyond disciplinary boundaries, what we can all agree on and what can unify knowledge. Firstly, Postmodernists reject any idea of a ‘grand purpose’ or unifying tenets of knowledge (Cloke, Philo, & Sadler, 1991).

Postmodernists might point out that we are missing essential information if we refuse to primarily focus on what makes disciplines different and why they disagree. One published UNESCO (1998) document summarized Prof. McDonell’s comments at a symposium identifying postmodernist thought as the enemy of transdisciplinarity (pp. 21-23).

In line with postmodernism and situational analysis I do not use an ‘all encompassing’ grand theory but a pluralistic theoretical approach which borrows from applicable schools of thought. I do not fit FRH research into a framework but use frameworks to fit the research. From a practical standpoint I choose to research FRH using transdisciplinarity because it favors an ever evolving, flexible, process-focused (not end result focused) approach with less pressure to form a rigid scientific method prior to data collection (Pohl, 2008; Pohl, 2005; Russell, Wickson, & Carew, 2008). Likewise situational analysis with theoretical footing in postmodernism is similarly open ended and process focused (Table 2.3). Unlike the goal of situational analysis, which is to describe multiple realities and to focus on differences, the goal of transdisciplinarity is to understand the present world and to try to unify knowledge (Nowotny, 2003). I part with transdisciplinarity on the goal of trying to unify knowledge, rather I lean toward situational analysis and try to include the contradictions as well as the similarities that present themselves through multiple worlds and knowledges. To a lesser extent I

theoretically align with the aspects of critical realism mainly influenced by Sayer (1984) and policy sciences mainly influenced by Clark (2002).

Table 2.3: Comparison of Characteristics in Transdisciplinarity, Policy Sciences and Situational Analysis.

A. Transdisciplinarity	B. Policy sciences	C. Situational analysis
- Theoretically driven with variable methodology	- Practical application driven with theory as a backdrop	- Theory-methods package
- Goal is the unification of knowledge	- Goal is practical and less theoretical	- Goal is not on unification but on identifying differences and focusing on what is left out
- Primarily Theoretical - Work transcends disciplines	- Work is open ended learning process - Less dependence on theory	- Research is open-ended learning
- Mixes natural, social sciences, humanities and other non disciplinary sources of knowledge	- Mixes natural and social sciences	- Social science driven with the relational focus of social mapping exercises
- Holistic - Goal: unity of knowledge, to include the values of all.	- Scientific method is holistic - Goal: human freedom and improved judgment	- Holistic, relational - Goal: to include values and discourses of all in democratic way
- Multiple realities	- Assumption of multiple realities that are partially socially constructed and partially real	- Multiple realities intertwined, changing, separate, complex mosaic, not one society, socially constructed
- Focus is on the problem rather than on the discipline	- Problem solving is process-like, empirical, systematic	- Problem solving is process-like, relationship mapping, positionality mapping - Solving a problem is not the focus, exposing multiple sides and interactions among actors (within arenas and worlds) is the focus
- Understanding comes from freely moving across transdisciplinary boundaries	- Understanding comes from interactions with context	- Understanding comes from complex representations of arenas and the multiple worlds within them

A. Transdisciplinarity	B. Policy sciences	C. Situational analysis
- Problem-oriented - Focus is on the problem not on the confines of the discipline	- Use of problem oriented, contextual, and integrative methods	- Use cartography, relationality and positionality to analyze data
- Transcend religions, disciplines, careers etc. - Sensitive to the local - Accepting differences and agreeing we are all part of one earth	- Empower people through close dialogue about problem solving in context	- Seek democratic representation of all discourses and narratives
- Work in groups with a transdisciplinary focus	- Professional works in groups with interdisciplinary focus	- Work in groups (to validate, verify data and analyze) with transdisciplinary focus
	- Professional stays in touch with action at all levels and dimensions of context	- Focus on simultaneous/various worlds involved to gain better perspective
- New disciplinary formations, transcending disciplinary boundaries	- Use policy science approach(es)	- New disciplinary formations, borrowing methods across disciplinary boundaries
- Subjectivity acknowledged	- Partial Subjectivity acknowledged	- Many subjectivities accepted

A=Nicolescu (2008), B=Clark (2002), C=Clarke (2005)

I agree with Pohl (2005) who writes that transdisciplinary research is “seen as a process (as opposed to a rigid methodology) that may be influenced by a particular discipline’s or non-scientist’s input. TR [transdisciplinarity] is accordingly characterized as a process of mutual learning” (p. 1161). Quinlan and Scogings (2004) see no one discipline as having all the answers. They advocate acceptance of tested caveats and principles from different disciplines. Each discipline is expert in certain areas. Accepting the expertise of different disciplines leads to questioning some premises upon which distinct disciplines are based and is unsettling because it ultimately leads to confronting disciplinary weaknesses and admitting that they lack some aspects of knowledge. Critical realism (Sayer, 1984; Bhaskar, 1979; Giddens, 1976; Harre, 1986) ties into this

discussion by claiming that knowledge is always changing and that science is inadequate at dealing with a continually reproduced knowledge (Table 2.4). Critical realism and transdisciplinarity acknowledge the fluid re-creation of knowledge by people. In addition, transdisciplinarity, critical realism and situational analysis all agree that different levels of reality exist and that there is no single ‘true’ reality.

Table 2.4: Theoretical Principles of Transdisciplinarity and Critical Realism

Theory/approach	Key theoretical principles of theory relevant to my research
Transdisciplinarity	<ul style="list-style-type: none"> a) research is not an objective process and should be open and reflexive to the researcher’s subjectivity and to participants’ subjectivities (how they see the topic, history, politics etc.) b) new data and new information can be gained from exploring the subject from various view points. c) there are different levels of reality (understanding, scale, arenas and worlds...).
Critical Realism and Realism (Sayer, 1984)	<ul style="list-style-type: none"> a) knowledge is not a finished product, it is always present and continually reproduced from human agency b) there are other ways of communicating besides through written and spoken language (feelings, senses) c) science is not the highest level of knowledge because it has not adequately dealt with feelings, participation and continually reproduced knowledge d) structures, processes and mechanisms can be revealed at different levels of reality

Transdisciplinarity (Nicolescu, 2008), Critical Realism (Sayer, 1984)

2.3 The Evolution of Postmodernist Theory and Geography

Postmodernism can be viewed as moving beyond the historical development of thought and ideals, which progressed through the Renaissance to Enlightenment and then to modernism. Enlightenment stressed tolerance, reason and common sense.

Enlightenment concepts include order, reason, truth and logic; the resulting ambitions are emancipation and progress. From Enlightenment stemmed modernist views, which

consist of a complex set of attitudes. Modernist science has profound claims about how the world operates. Modernism consists of artistic expressions (symbolism, surrealism etc.) which are not ordered *per se* but represent a belief that art is a complement to science and that together they could point a new way toward understanding human nature and society. Ironically with time, ‘true’ science and art extensively divided. Modernism holds organizing principles such as God, modes of production, interactions of agency and structure, the subjectivity of human beings at an imagined centre. Related to such organizing principles, the Natural scientific model follows laws (Newtonian, Darwinian etc.) and these are ordered by a ‘true’, natural process.

Postmodernism is critical of ‘grand’ positions held by theories believed to have derived from modernist principles. Postmodernism is also critical of grand theories because they claim to be unequivocally true. It becomes apparent that I align my research with postmodernist thought that is skeptical of organizing laws and is critical of enlightenment ideals such as order, truth, logic and reason. The theory behind the section describing the qualitative approaches to wicked problems (section 2.1.3) is postmodernist, and postmodernism questions spatial order (order, fitting data into categories and cleaning up data). Postmodernism is suspicious of organizing laws such as economic logic of production (Marxism) or subjectivity of human beings (humanism). Some Postmodernists, for example, might occupy themselves with finding alternative ways to describe human geography because writing is linear and sequential while human geographies occur simultaneously. This ‘problem of geographical description’ is concerned with how to describe or show geography with connections as a whole when

our descriptive tools (writing) are so linear and inadequate. I believe this is where social mapping (situational analysis) can be used as a descriptive, non-linear, analytical tool.

From the eyes of a human geographer physical geography seems to be more cohesive methodologically and is reaching into more technologically specialized areas such as GIS. Human geography appears to share similarities with the social sciences while physical geography gravitates toward the natural or 'hard' sciences (Massey, 1999). One major philosophical difference between physical and human geography is that, generally the social sciences have devoted some effort to questioning the objectivity of science and the singular model and philosophy of science. This singular scientific method continues to dominate as the only science in most physical disciplines (Sayer, 1984). Science is a social construct: it is not objective; it is contextualized in cultural settings, philosophy, history and politics. Thus it is difficult to separate science from society. The physical, natural, 'hard' sciences value *the* traditional philosophy of science as a prestigious, credible, and often the singular scientific approach, or choose not to question the philosophical premise upon which it is based. From my perspective all disciplinary boundaries are artificial and socially constructed. Paradoxically one aspect that natural and social sciences share is that they are both socially influenced and categorized.

In geography loyalty to one or the other side of existing dualisms such as the human-physical, human agency-structure, grand theory-pluralism, micro (local)-macro (national) perspectives, and subjectivity-objectivity, persist and at times threaten to break and further divide the discipline (Sayer, 1984; Cloke, Philo, & Sadler, 1991). Not surprisingly then, geography has continued to explore theoretical frameworks that strive

to include or move beyond these and other dualisms (Cloke, Philo, & Sadler, 1991). This is where I believe situational analysis has much to offer. For example, the mapping exercises in situational analysis can be used to encompass a wide spectrum of scale from micro (individual) to meso (community and local groups) or macro worlds (national, global, large groups) that transcend human and non-human positions. I use social mapping to include both individual perspectives and organized (loose or rigid) group perspectives within meso-level worlds.

2.4 Conclusion

There appear to be multiple theoretical divides within geography. Not all is lost because we do not agree, however, the rich multitude of approaches may lead to a more complete understanding on certain subject matters; or, as postmodernism suggests, we may have to respect differences of opinion and learn from our differences rather than allow them to divide us. Geography is in a unique position to embrace many postmodernist, social mapping, and transdisciplinary ideas presented throughout this chapter. The unique position to do so is a result of geography's breadth and depth both theoretically and in practical research topics. The use of multidisciplinary and interdisciplinarity in geography is a helpful transition to transdisciplinarity. Also, geography allows for the fluent use of postmodern situational analysis through the use of social mapping as well as certain theoretical bases of transdisciplinarity.

The next chapter provides foundational literature and knowledge on FRH illustrated within, among, and between arenas and arenas.

CHAPTER 3: USING SOCIAL MAPPING TO GROUND FOUNDATIONAL LITERATURE AND KNOWLEDGE

Reflexive Excerpt 1

Several authors involved in qualitative research have commented on the misplaced focus of ‘background’ chapters or sections (Clark, 2002, p. 118; Clarke, 2005, p.71; Cronon, 1992, p. 33). Alongside them I concur that background information should not be a side note to include and then to move beyond. Background information in my work identifies, grounds, centres and ties together the research. The term background information itself gives the impression that it belongs in the background. I would argue that background information is actually at the forefront, centre and inextricably intertwined throughout the research. Background information is knowingly or unknowingly chosen by the researcher and is part of the theoretical framework (because it identifies what is deemed as an important and relevant part of the research). The background information that the researcher chooses to include actually identifies the focus of the research and helps to identify what is relevant and important. My research is based upon, around and within the background information. The literature reviewed in the foreground chapter ties together and illustrates connections between respondents and topic areas of study.

In this chapter I use social mapping (situational analysis) to foreshadow results, review existing research and to describe the actors and their general positions in relation to their prospective worlds. I organize this chapter into four major foci: a) government, science and research, b) industry, c) legislation and d) the encompassing socio-cultural arena. The arenas represent the precincts for my research.

Through the arenas and worlds maps I try to illustrate, visually, the multiple social worlds that exist and to identify the overarching message of each world and its relationship to other worlds. Many people participate in more than one world (e.g. they can be hunters, Metis, and part of Willmore Wilderness Foundation). The relative size and placement of the worlds was basic but I generally placed worlds that were similar or overlapping closer together and those that were unrelated, conflicting or oppositional farther apart. This is perhaps most evident in the positional map (Figure 6.1) showing

respondents' perspectives on horse population numbers, and the benefits and problems that FRH might cause respondents. The *power* of different worlds in relation to one another was represented by the size of the circle. WHOAS, for example, plays a large (more powerful) role and organizes itself around FRH so the WHOAS world is illustrated as large. AESRD's world is large because they control and make decisions regarding FRH. The maps also are an examination of myself as analyst.

I created the arenas as a way to illustrate relationships among the many worlds by asking the following questions suggested by Clarke (2005, p. 115): What is the focus of this arena? What social worlds are present and active? What are the contested topics and current controversies in the arena's discourses? Are there any silences or absent worlds that you might have expected? I created worlds within each arena by asking: What is the work of each world? What are the commitments of a given world? How does the world describe itself in its discourse(s)? How does it describe other worlds in the arena? What is the main message of each world? What are the divisive messages? Exposing the complexities, dimensionality and relationships is my goal.

It is important to remember that all arguments presented throughout this thesis come from various worlds and arenas. The industry arena plays a minor role in this research and is merely used to briefly describe historic and contemporary connections to FRH. The arena with government and academic worlds as well as the arena describing legislation contains arguments that are more clearly defined, better explained, more cohesive and widely agreed upon (although scientific worlds also disagree as is demonstrated in the section dealing with forestry) than are arguments in the socio-cultural

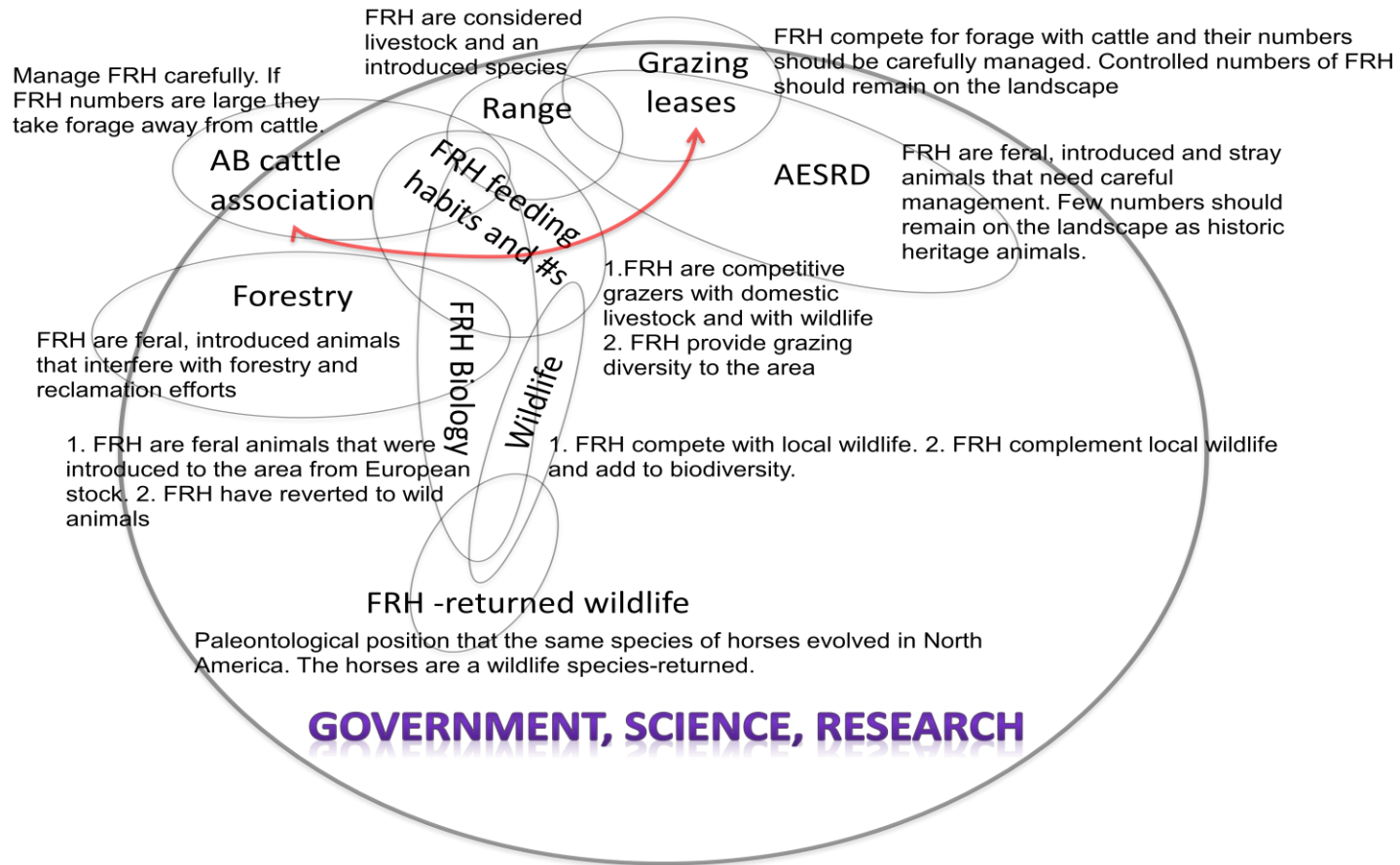
arena. In this instance, while the arguments may be just as relevant or important, they may be less well agreed upon, non-linear and less cohesive.

A range of arguments is used both to support and to oppose FRH on the landscape. Evidence in support of FRH includes horses as returned wildlife that prehistorically occupied N.A (Martin, 2005, p. 194; Kirkpatrick & Fazio, 2010; Flannery, 2001, p. 295; Burckhardt, 1996), prehistoric horses remaining on the N.A. continent based on oral history (Henderson, 1991), FRH providing various biological advantages to the environment based on the predator-prey dynamic between horses and cougars in various places of the U.S.A. (Turner & Morrison, 2001; Turner, Wolfe & Kirkpatrick, 1992), and potential wolf predation (Van Duyne et al., 2009), multiple grazers (including horses), improvement in rangeland quality through different grazing styles and patterns (Beever, 2003) and that horses provide access to forage and water for other grazers by removing snow and ice (Notzke, 2010). Evidence opposing FRH on the landscape include issues of overgrazing (Beever, 2003), potential competition with big horn sheep (Ostermann-Kelm, 2008) or other wildlife, interference with the forestry industry (Irving, 2001), damages caused because horses are not native to the area (Girard, 2012) and degradation of rangeland (Beever & Herrick, 2006). Clearly, scientific or professional opinions can oppose one another or present differing perspectives (e.g. native vs. introduced species, beneficial vs. detrimental grazers). In the section below I present positions and respective information from government, science, and research.

3.1 Government, Science and Research Arena

The positions (acquired from discourse in interviews, literature, published documents) held by worlds containing grazing, grazing leases, the Alberta cattle association, AESRD and rangeland health are similar (Figure 3.1). These worlds view FRH as introduced species that that need to be carefully managed and their numbers controlled. Forestry positions itself in greater opposition to FRH than the other worlds. Scientific information on biology as well as research on wildlife and free roaming horse interactions is used to both support and oppose FRH on the landscape. Lastly, paleontological and related perspectives support FRH on the landscape as a species returned.

Figure 3.1: Government, Science and Research Arena



A simple comparison of research findings from research reviewed in the forestry (3.1.1) and grazing competition (3.1.2) sections below clearly illustrates the nature of the ‘wicked problem’ (Table 3.1). The differences may be partially explained by separate FRH herds having varying access to different geographic locations. Various worlds or even individuals within the same world may view and frame FRH differently and thereby present and explain research results in a number of ways. I draw from critical realism when I say that there are many levels of truths (or levels of understanding) and the ‘background’ information used to frame, ground and define the issue of FRH from one world to another is related to a particular truth or understanding.

Table 3.1: Examples of Different Perspectives to Similar Research

Different and similar findings between two separate herd studies
<ul style="list-style-type: none"> ▪ FRH select grasslands and avoid conifer forests (found by Irving, 2001 as well as by Girard, 2012) ▪ Girard (2012) found cutblocks were selected by FRH in the Winter whereas Irving (2001) found cutblocks were not selected in the Winter. ▪ Girard (2012) found grazing decreased with human disturbance while Irving (2001) found horse use to increase with human and other disturbances.

3.1.1 Forestry

Within the arena presented in Figure 3.1 the forestry world was most opposed to FRH and held the position that FRH interfere or undermine reclamation efforts (see 6.12 and 6.13). Respondents related to forestry spoke of horses trampling and grazing in newly reforested areas as well as eroding and trampling road reclamation efforts. Findings related to available research on FRH diets demonstrate that FRH diets did not consist of evergreen vegetation (Irving, 2001; Salter & Hudson, 1979). Research conducted south of Hinton, Alberta revealed that horses concentrated their winter grazing preferences for horsetail (*Equisetum variagatum*) and dwarf birch (*Betula glandulosa*) in hygric meadows

(i.e. non-commercial forests) (Irving, 2001). Respondents in my research area corroborated the finding that FRH graze on birch. In both of these studies FRH did not graze on mature or young evergreens. It is difficult to unequivocally determine if, during times of extreme stress, when preferred vegetation is unavailable, whether FRH might resort to eating very young replanted seedlings.

In respect to location, research on FRH herds in the Albertan foothills (Girard, 2012; Irving 2012) revealed that FRH consistently selected grasslands and avoided conifer forests. Girard (2012) noted that cutblocks were selected by FRH in the winter and that grazing decreased with human disturbance sites (roads, trails, cutlines). Whereas Irving (2001) found that FRH did not graze in cutblocks in the winter. Summer grazing locations that were selected by horses were disturbed sites such as areas where power lines, landings and spur roads were located. The research indicates that if seedlings are located in hygric meadows, are small and horses are geographically confined to the cutblock areas and graze in early summer, damage to seedlings by trampling may occur (Irving, 2001). Overall, however, and despite claims made by forestry FRH were found to cause minor damage to regenerating cutblocks.

3.1.2 FRH Grazing Competition with Wildlife and Cattle

Generally the positions of worlds related to grazing cattle were wary of FRH and careful management of FRH numbers was a concern.

Respondents in my research observed digging and pawing in the winter by FRH that also resulted in ungulate co-grazing behaviour. Similarly, horses in Salter and Hudson's (1979) study were observed to be good at digging and pawing at forage from

beneath the snow. Bhattacharyya (2012) writes of horses being used in the winter to paw through ice and snow to uncover forage for cattle.

FRHs preferred to graze in open habitats; surveys of pellets suggest that horses and cattle used similar areas as well as open areas (Girard, 2012). Horses did not select the rugged terrain areas preferred by wild ungulates. On the other hand, an older study by Salter and Hudson (1980) also in the foothills of Alberta, suggests that horses used larger spatial areas and more general habitats than any other ungulate (cattle, deer, moose, elk). Unlike respondents in my research the authors state that deer and moose did not interact with FRH and had dietary differences. Horses and elk were both found to use dry grasslands during winter and spring; however, elk numbers were minimal so competition was nominal. In the spring FRH preferred sites where cattle were later grazed but horse use of these areas was not excessive. There was little simultaneous spatial overlap between cattle and FRH foraging in the Summer however grazing areas did overlap between the two species at separate times. The authors concluded that little grazing competition between FRH and wildlife was present but that there was potential for competition between FRH and cattle.

There is another side to this story where research, independent from the grazing of cattle, maintains that free roaming horses will feed farther away from water sources than cattle and will feed on lower quality plants that cattle reject (Berger, 1986; Hubert & Klein, 2007; I13; Roe, 1955). Thus, the issue of grazing competition between cattle and FRH is at least partially a human construction that is politically and economically driven. The following section continues to examine an aspect related to grazing and the close

relationship between rangeland health, research, the Alberta government and the livestock industry.

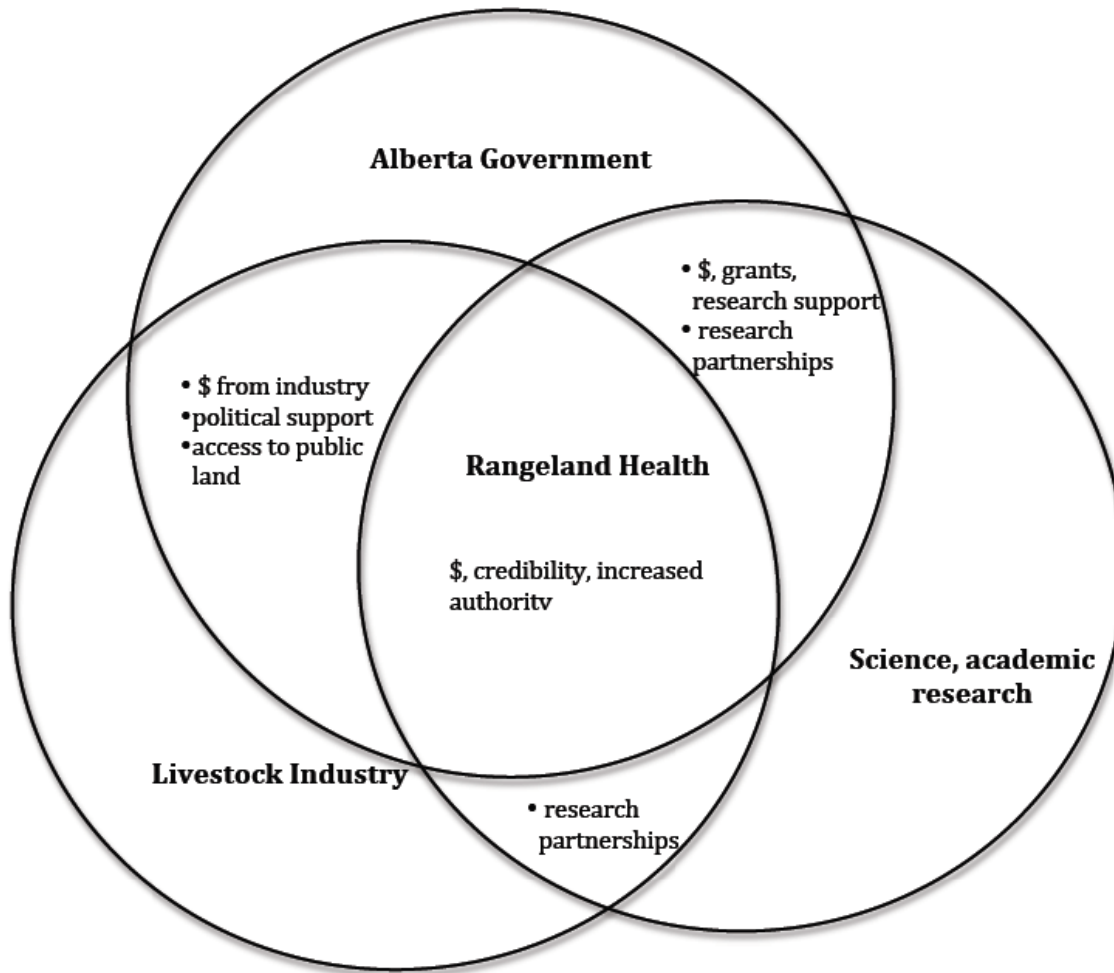
3.1.3 Rangeland Health (Synonym Range)

Rangeland health is defined as a separate scientific community on the Alberta SRD website; based on this and similar self-proclaimed excerpts from the website I clustered rangeland health as a world because people of like mind and understanding of the concept make up this ‘community’. Specific terminology and theoretical underpinnings in the scientific world of rangeland health relate to transdisciplinarity and the enclosed exclusivity of specific disciplines compared to other disciplinary (or non-disciplines but practical) knowledges and understandings.

Rangeland health is defined by the government of Alberta as “land supporting indigenous or introduced vegetation that is either grazed or has the potential to be grazed and is managed as a natural ecosystem. Rangeland includes grassland, grazeable forestland, shrub land, pastureland and riparian areas” (AESRD, 2014c; Alberta Agriculture and Rural Development, 2008 December). The Alberta government, the scientific community and the livestock industry benefit from a similar positionality toward their understanding and definition of rangeland health and they strengthen this ideology by upholding cohesive partnerships (Figure 3.2). Simplistically put, the government of Alberta benefits financially and politically from the cattle industry, while the cattle industry gains grazing access to public land from the government. In exchange, ‘academic research’ benefits from partnerships with government and the cattle industry through financial support (research grants). These three intertwined relationships (see

Figure 3.2) strengthen the legitimacy of the concept of rangeland health.

Figure 3.2: Commonalities in Understanding of Rangeland Health



Further support for the relationship between rangeland health and the livestock industry can be found in the following quote,

Rangeland ecosystems have traditionally been valued as an important source of forage for the livestock industry. Today there is a growing awareness of the important functions and values that rangelands provide to society. We must act as careful stewards to maintain rangelands in a healthy condition (Adams et al., 2009, p. 7).

The relationship between cattle grazers and the government is exemplified by grazers having access to Alberta public lands through a variety of leases, permits, licences, reserves and allotments (Table 3.2). In 2003 SRD (2003, December) reported receiving over \$4 million in revenue each year from grazing on public land. Wildlife as well as FRH may be found on the same public lands as grazing cattle. FRH, cattle and wildlife temporal and spatial grazing habits that are frequent and intense may escalate human perceptions of alleged or actual competition for forage.

Table 3.2: Definitions of Lands Partially or Fully Allocated to Grazing

Acquiring the use of Public Lands Related to Grazing
<p>Grazing Leases Grazing leases account for most of public land grazing. The leases are long term and are issued to individuals, corporations or associations.</p> <p>Grazing Allotments Grazing allotments are large areas of forested range in the central and southern foothills of the Rocky Mountains with minimal fencing and are defined by natural barriers (rivers, mountains). Cattle only graze a small portion at any given summer.</p> <p>Grazing/Hay Permits Grazing permits are also issued on land reserved for other purposes or when it is not considered in the public interest to grant long-term dispositions on specific land. Grazing permits may be renewed at the department's discretion. These permits are issued annually and often on fragmented parcels and periodically wet areas.</p> <p>Head Tax Permits and Grazing Reserves Head tax permits are issued for livestock grazing for short periods of time (usually less than a year) in more remote areas. The land may not have to be fenced and municipal taxes are not applied.</p> <p>Provincial Grazing Reserves There are about 32 grazing reserves or community pastures throughout the province. Livestock operators may put livestock on the reserves, where space is available. Reserves are managed for both livestock grazing and other multiple uses such as hunting and fishing.</p> <p>Grazing Licences A grazing licence may be issued for livestock grazing on public land for a term of up to 10 years. Licences are usually issued when there are other uses of the land such as timber production. Grazing within a Forest Management Agreement Area can only be authorized under a licence.</p>

(Alberta Government, 2014; SRD, n.d.; SRD, 2003 December)

I now turn to a brief review of literature on FRH as returned wildlife and conclude the discussion of this arena by reviewing literature on FRH biology.

3.1.4 Horses as Returned Wildlife

Although science based research is more cohesive and widely agreed upon than some socio-cultural perspectives covered at the end of this chapter all scientists do not agree on the role of free roaming horses in the environment. Notzke (2013) reviews science from palaeontologist, paleoecologist, mammologist and range scientist literature that presents FRH as returned wildlife. Scientific paleoecological views on FRH contradict scientific positions held by the Alberta government. Kirkpatrick and Fazio (2010) lend credibility to the argument that FRH are native wildlife based on two criteria that they use to define native species: 1) that the horses geographically originated in the area and that 2) the horses co-evolved within the habitat. The authors argue that FRH fulfill both of the requirements, making them native species (perhaps arguments could be brought up regarding breeds of horses but not about the species). Native, introduced or other, FRH occupy the Alberta landscape making their biology relevant to population numbers and inadvertently to their interactions with humans.

3.1.5 FRH Biology

I now turn to biology with a focus on reproduction and population. One area of great debate surrounds FRH numbers and how many should occupy the landscape. The biology, social structure and thereby survival of FRH is information that can help inform and predict future numbers. Wise management of FRH would also take into consideration biological factors.

The social structure of FRH consists of harems of polygamous families. One herd (50-300 horses) consists of several harems, each protected by a stallion and led by the

lead mare, and each with a hierarchical standing within the herd ranging from dominant to subordinate (Berger, 1986; Hubert & Klein, 2007). Since subordinate harems have to give way to more dominant harems, subordinate harems are less stable and the stallions are less capable of keeping the group together and defending their mares and offspring. Those from subordinate harems are more likely to succumb to predation, illness, starvation and death.

Plate 3.1: One Harem of Free Roaming Horses



Alex Bartholomew

Adult horses need to sleep 5-6 hours and to feed for 15 hours a day. FRH will eat flowers, grasses and grains but also will resort to roots and woody plants if preferred plants are unavailable. FRH in the USA have been observed to live to 20 years of age.

One study from 1976 on the social organization of FRH in the rocky mountain foothills found similar results as those in (Salter & Hudson, 1982) the preceding U.S.A study.

The fertility period (estrus) is three weeks long and the females are in heat for 5-9 days (Berger, 1986). The gestation period lasts from 10-12 months depending on the stability of the harem and on the weight and physical condition of the mare. In Alberta breeding behaviour was observed at the end of April until June and most foals were also born within this time period (Salter & Hudson, 1982).

Plate 3.2: Young Free Roaming Horse



Alex Bartholomew

Interviewees from my research spoke of FRH as stronger and better adapted to their environment than domesticated horses. In the same vein, Bhattacharyya (2012) found that local people felt that wild horses were better adapted to the landscape and

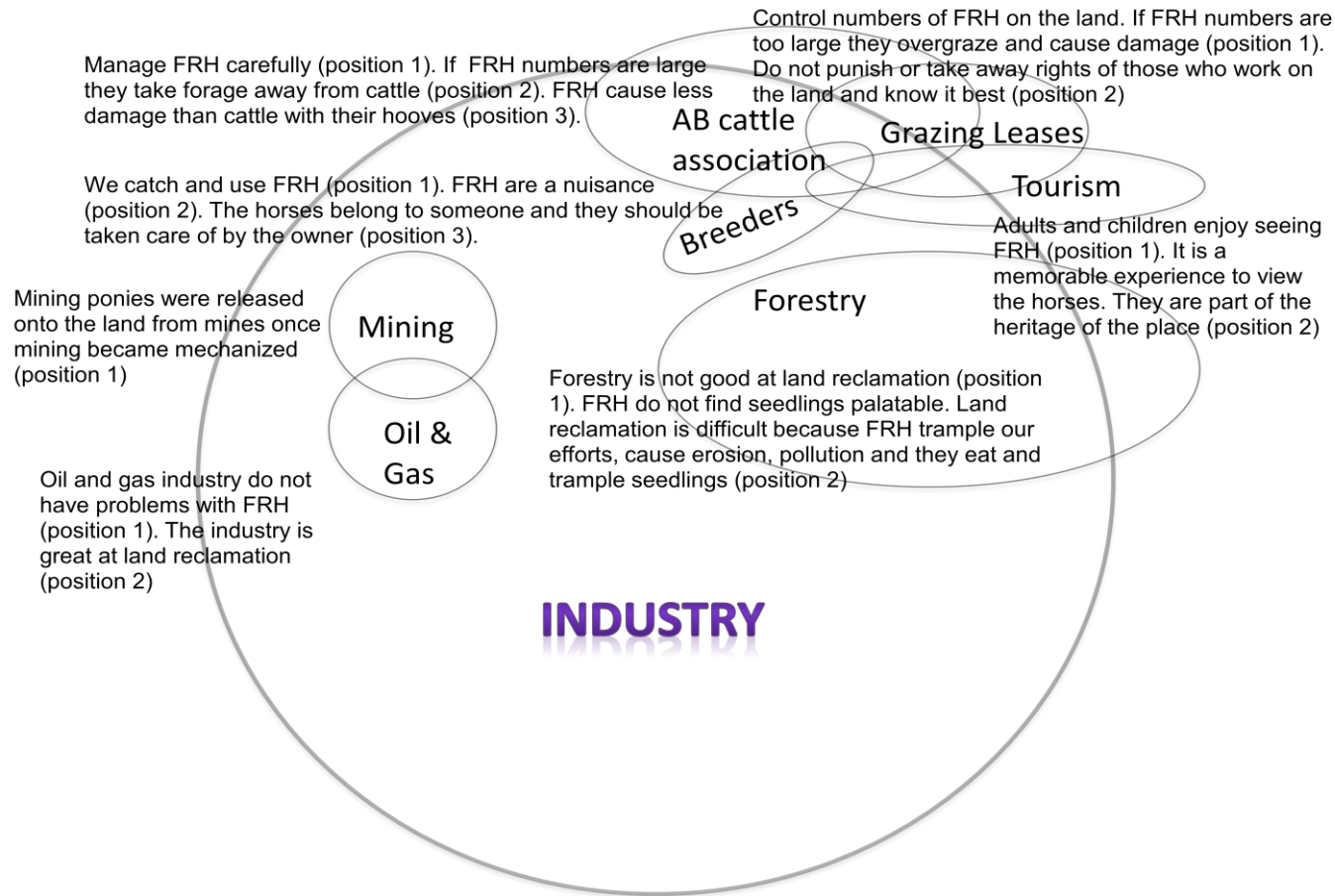
climate. Their immune systems are much stronger and they are generally healthier and more resilient (Berger, 1986; Hubert & Klein, 2007; Roe, 1955). Historically, FRH were often used to strengthen registered breeds such as the American Quarter horse, the Morgan and the Standardbred (Bearcroft, 1966). Local people I interviewed currently use and breed FRH for that very reason. Some respondents suggested that FRH could provide genetic diversity and act as breeding stock for domesticated horses.

The arena containing government, science and research extends into other arenas. The next arena is a brief overview of the relevance that industry played and at times continues to play in relation to FRH.

3.2 Industry Arena

This section is a short overview of what I learned from respondents, local museums, information centres, local venues and on line sources about the connections between industry and FRH (Figure 3.3). I did not directly interview specific people or industry representatives in mining and oil and gas however respondents did comment on the industries. Although industry perspectives are beyond the focus of the research here, I include a brief review of the industrial worlds because of the historic and sometimes contemporary relevance to FRH. Tourism, cattle grazers and horse breeding worlds are not discussed here because they are dealt within the socio-cultural arena section.

Figure 3.3: Industry Arena



Respondent positions, contested topics and controversies related to industry

3.2.1 Mining

Horses are historically tied to the industries and to the people that established themselves in the area. Prior to mechanization ponies were used to work in local mines and according to respondents were released once no longer needed. One respondent with generational ties to the area commented on the similar genetic phenotypic traits of FRH observed and to the mining ponies in the area.

3.2.2 Logging

Reflexive Excerpt 2

During the interviews process and especially during my first field season when I was getting to know the area, the community and the people that live there; local terminology and talk of local problems were new to me. I was, at times, unsure of local geographical areas, local language, terms and the common local understanding of local specific events. For example, there was a common almost local understanding of damage that deer, elk and bears can cause and the type of fences that are financially beneficial to install. After reflecting upon the interviews what was more relevant to my research was that respondents perceived and spoke of forestry in two different ways. By some, forestry was articulated and thought of as a public government enterprise that manages lands for logging practices (department of 'Forestry') while others thought of forestry as the direct private enterprise of logging companies that engage in the practice of processing timber for economic enterprise. Due to the nature of continuously evolving and pace changing aspects of conversations, it is difficult to fully understand the meaning of how things are said and what they precisely mean. At times I was reluctant to ask for clarification because I did not want to interrupt the flow of thought that the respondent was sharing. Listening to the interviews, transcribing them in detail and reflecting upon each interview helped to clarify and to grasp some of the nuanced meanings behind certain statements. Since the moment of conversation can not be re-created and respondents do not always remember what was meant by certain statements when asked in future follow up conversations, I can only try to comprehend as best as I can through transparency, direct quotation, careful reflection and by the tone and entirety of the conversation the true meaning of certain statements. I also reflected upon my understanding of opinions, that I see as multi faceted, and that a full true meaning and understanding may not be achievable. In comparison, opinions shared within my own family (whom I feel I know well) are at times not fully comprehensible to me or easy to explain.

Similar to mining, horses were used to work in the logging industry in the area and were suggested, by respondents, to have been released once mechanization became prevalent.

3.2.3 Oil and Gas

One respondent participated as a prospector for oil and gas exploration on horse back in the 1930s. Another respondent spoke about oil and gas positively regarding their land reclamation efforts following extraction. Yet another respondent spoke of industries as being too aggressive and causing too much damage and most importantly as being multinational conglomerates that take away local rights and the ability to make decisions that benefit local people.

Industries such as forestry and those involved in grazing cattle are concerned with legislation and policy to protect their perspective and often have the resources and organizational capabilities to make their perspectives heard. One respondent involved in forestry communicated to me clearly that being involved is important so that the viewpoint from a forestry perspective is included as part of future policy. Unfortunately, there are other groups of people who may not have the resources, abilities or organizational capabilities to present their equally relevant perspectives. I hope to create a more democratic and inclusive collection of perspectives, even when the perspectives are not easily accessible, organized or salient.

3.3 Legislative Arena

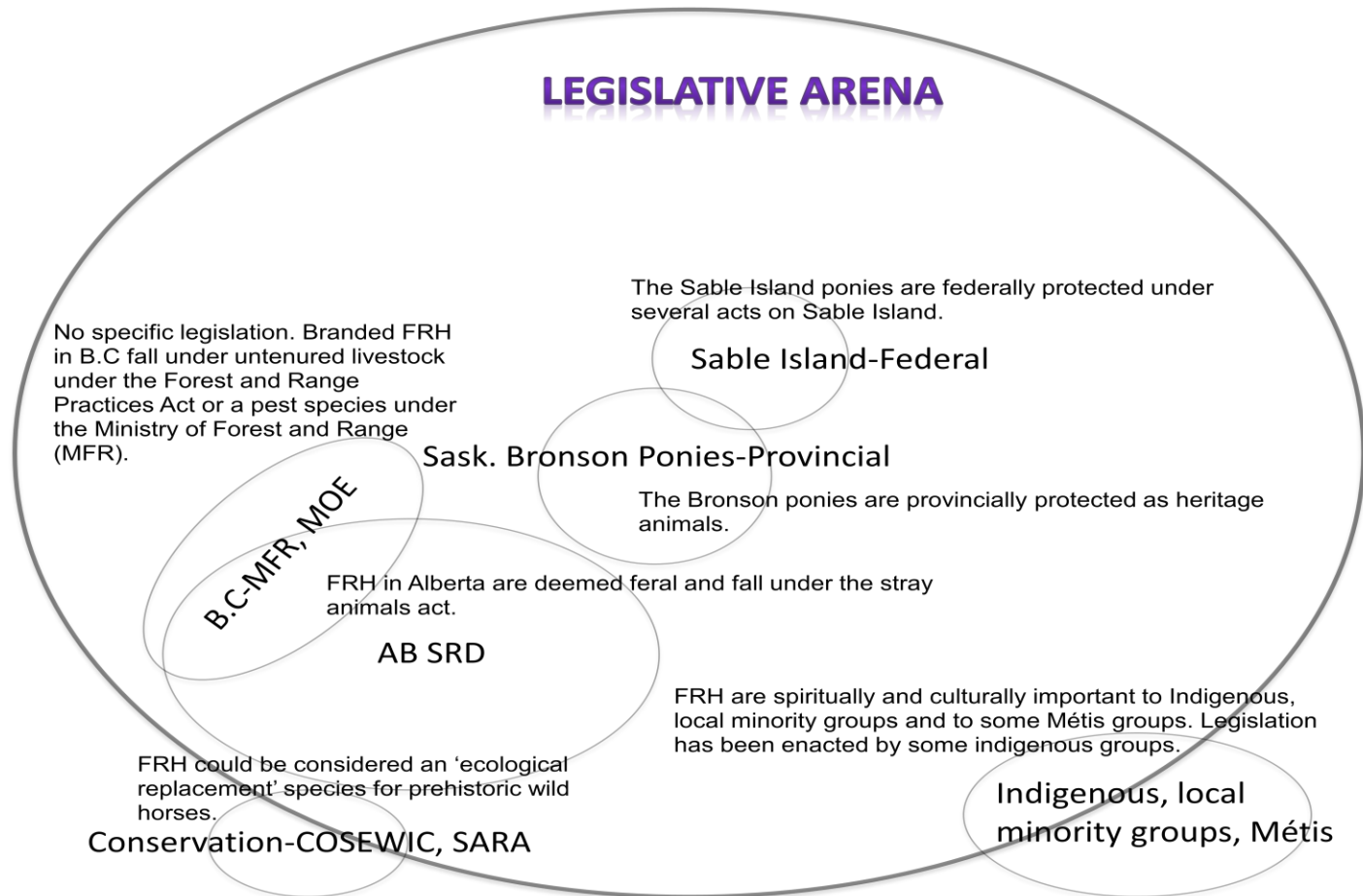
Current legislation of FRH is reviewed in this section by starting with a review of Canadian laws, policies and management. I conclude by broadening the discussion to FRH in the United States. Although FRH speckle landscapes all over the world, I focus on North America because FRH in Alberta possibly share ancestry and socio-cultural attributes related to Indigenous and European settler trading and movements.

In addition to existing written legislation and policy, the legislative arena deals with changing policies over time and the struggles that contemporary modifications have introduced (Figure 3.4). For example, as eluded to earlier, regulations that partition landscapes with the use of fences have present challenges for those who continue the tradition of releasing horses onto the landscape. Indigenous people as well as early European settlers had the autonomy to release horses to pasture, especially during the winter months, whereas with the partitioning of land for specific uses and with the introduction of fences, policies and legislation changed the way people are able to use the land. The release and capture of horses was and continues to be a way of life for some people and for specific communities but contemporary policies prohibit these practices that have historic and cultural roots.

In the same vein Alberta does not address historic or contemporary uses of FRH by Indigenous, Métis and early settler people through current policy or legislation. Not only are these peoples' voices often neglected in regard to FRH, their current practices and relationships with FRH are not addressed or recognized by current policy. The argument made by several respondents was that policy makers who reside in big cities

focus policies on urban perspectives and do not understand or are able to plan for local and culturally significant practices

Figure 3.4: Legislative Arena



3.3.1 Policy, Laws and Definitions of FRH

Policy and especially laws are rooted in precise definitions. Clark (2002) warns that equating policy with law is a misconception because policy is “a social process of authoritative decision making by which the members of a community clarify and secure their common interests” (p. 6). Because laws are (should be) created based on the outcomes of the policy process, the two are used synonymously herein. The fuzzy boundaries and socially constructed definitions pertaining to FRH make the horses difficult to categorize and even harder to manage through the creation of policy and law.

A conservationist based argument from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) could be made that FRH in Alberta could act as an ecological replacement species for prehistoric horses and then they could be categorized as wild by nature or “captive individuals with recent wild ancestors” (2010, E7, p. 1). As defined by the International Union for Conservation on Nature (IUCN), ecological replacement species are those that are, “most suitable existing subspecies, or a close relative of the extinct species within the same genus” (2013, p. 12). The domestication of the horse might make ecological replacement problematic because horses have been selectively bred in captivity for docility and other non-wild traits.

In addition to placing FRH within the arenas/worlds framework I use social constructionism in much the same sense as Rikoon (2009) who defines it as human beings creating meaning through social interactions with others and as a result producing and reproducing collectively held beliefs. Implementing policies and laws is especially difficult in areas where there are interested parties with differing values, attitudes and perceptions toward the horses. Furthermore, as mentioned above, another challenge is the

democratization of policy and including those who have been systematically excluded from contributing to the conversation.

3.3.2 Canadian Laws and Policies

The National Horse of Canada Act (2002) demonstrates one aspect of the cultural importance that horses continue to play as part of Canadian heritage and national identity (Table 3.3). The ancestors of the Canadian horse are deemed to be the French horses brought over in 1665. The act itself notes the importance of the Canadian horse as being invaluable to settlers in helping them survive and prosper as well as recognizing the horses' struggle to survive as a casualty of war. The government of Canada "wishes to recognize the unique place of the Canadian horse in the history of Canada" (National Horse of Canada Act, 2002). Similarly to the National horses of Canada I would argue that some FRHs of Alberta also played a significant role in Canadian history and national identity as reviewed in the section on FRH history (Montague, 2010). To lend further credibility to FRH playing a role in Canadian history and national identity one respondent spoke of FRH being 'drafted' from Alberta and brought to Europe to fight in WWI (I22).

Table 3.3: Excerpts from National Horse of Canada Act

Relevant excerpts from the National Horse of Canada Act (2002)
<p>National Horse of Canada Act (2002), Federal An Act to provide for the recognition of the Canadian horse as the national horse of Canada.</p> <p>WHEREAS the Canadian horse was introduced into Canada in 1665, when the King of France sent horses from his own stables to the people of his North American colony;</p> <p>WHEREAS the Canadian horse increased in number during the ensuing century to become an invaluable ally to the settlers in their efforts to survive and prosper in their new home;</p> <p>WHEREAS all Canadians who have known the Canadian horse have made clear their high esteem for the qualities of great strength and endurance, resilience, intelligence and good temper that distinguish the breed;</p> <p>WHEREAS the Canadian horse was at one time in danger of being lost through interbreeding or as a casualty of war, but has survived these perils;</p> <p>WHEREAS, since 1885 and all during the present century, widespread and increasingly successful efforts have been made to re-establish and preserve the Canadian horse;</p> <p>AND WHEREAS the Government of Canada wishes to recognize the unique place of the Canadian horse in the history of Canada;</p>

Various contexts and levels of policy apply to FRH in Canada (see Table 3.4).

Sable Island horses are federally protected and live entirely unmanaged (Bearcroft 1966; Notzke, 2012; Lucas, 2004). The Island is unoccupied by humans with the exception of a single weather station that is operated by Environment Canada. The numbers of horses on the island rise and fall (between 200-350) and the horses have not depleted their resources or overpopulated. The Newfoundland pony is protected but differs from FRH because it is bred in captivity. The Newfoundland pony (Newfoundland Pony Society, n.d.) is recognized for its hard work and contribution to European settlement of Newfoundland and is as a result, protected as a heritage animal.

Table 3.4: Excerpts from Laws, Policies and Management of FRH in Eastern Canada

Acts pertaining to the Horses of Sable Island, Nova Scotia
Federally protected under several acts, not as a single species but as part of the land and ecosystem. Acts and regulations that protect Sable Island can be used to protect the horses that are part of the land. The horses of Sable Island are protected under the Sable Island Regulations of the Canada Shipping Act (2001). In addition, the Canadian Coast Guard, Department of Fisheries and Oceans (DFO), Fisheries Act (1991), Migratory Bird Sanctuary Regulations and the Migratory Birds Convention Act (1994) may be used to protect the horses (Friends of Sable Island Society, [accessed in 2004] 2012).
Management Management strategies involve limiting human and industrial interference to the horses.
Newfoundland: Newfoundland Pony
The Newfoundland pony is provincially protected as a heritage animal but differs from FRH because most of the ponies are being bred in captivity, are semi-wild or owned and domesticated (Lucas, 2004; Newfoundland Labrador Canada, 2014)
The provincial government of Newfoundland states that (Newfoundland Labrador, 2014), <ul style="list-style-type: none"> • The Newfoundland pony society has been designated under the Heritage Animals Act to protect and preserve the Newfoundland Pony. As part of this responsibility they will be maintaining the Registry of all Newfoundland Ponies and assisting in the export restriction of these animals from Newfoundland. (Friends of Sable Island Society, [accessed in 2004] 2012) • These hardworking and loyal ponies hauled firewood, timber, kelp, rocks and many more things. They transported their owners by back, cart and wagon in times before the car. They were an integral part of Newfoundland life right up to the late 1940s and 1950s and in some places beyond.

FRH in B.C. do not have a formal legal designation, they are not formally recognized, however they have been placed under a livestock and pest label when managed or when legislation is required for government to act (Table 3.5). Specific protection extended to horses occupying parts of the Brittany Triangle in B.C. has been initiated and legislated by the Xeni Gwet'in First Nations Government in British Columbia (Table 3.5). The Xeni Gwet'in have been engaged in legal disputes over land use and FRH conservation. There are several hundred (400) FRH in British Columbia

where the Xeni Gwet'in people identify strongly with the horses and practice a horse culture (Friends of the Nemaiah Valley, 2002).

Indigenous group(s) (Stoney) in Alberta also indentify with local FRHs. The Stoney connection to horses is demonstrated by one local research project conducted by the Gallileo Educational Network (n.d.). The wild and free website shares a recorded collection of interviews with primarily Stoney, Nakoda First Nations knowledge holders. These interviews captured stories and the cultural importance of horses and wild horses to the Stoney people. The messages relayed traditional relationships with horses and the importance of wild horses remaining in the wilderness. Respect for, and wisdom of wild horses was often articulated as was the wisdom that wild horses hold in regards to navigating the natural environment. Although it is beyond the scope of this research to unilaterally focus on documenting the varied and rich cultural significance and connection of wild horses to the local Indigenous cultures, it is apparent, from the data collected for the 'wild and free' website that wild horses are an important part of the culture of the Stoney people. Although at this time there have been no legal disputes regarding FRH and their connection to Indigenous people in Alberta. Alternative theories on the origins of horses from Indigenous perspectives are further discussed in the socio-cultural section.

Table 3.5: Excerpts from Laws, Policies and Management of FRH in British Columbia

<p>Provincial, British Columbia</p> <p>Provincial, British Columbia Historic lack of policy. Management occurs unofficially through B.C. Grazing Act under the Ministry of Forests Range (Card, 2010). FRH provincial legislation states that FRH are non-native, feral and are not recognized as wildlife species under the B.C. Wildlife Act.</p> <p>Management Management is unofficial. Permits to round up FRH before the 1960s were issued and a bounty program offering reward per pair of ears also existed.</p>
<p>Self Governance: Xeni Gwet'in First Nations Government, Brittany Triangle, British Columbia</p> <p>Xeni Gwet'in, strongly identify with FRH. They collect riding stock from free roaming horse herds. The Xeni Gwet'in have strong cultural, spiritual and economic (trade, sale and personal uses) attachment to the horses. The Xeni Gwet'in are vocal about conservation, preservation and protection of FRH in the Nemaiah Valley and Brittany Triangle (Friends of the Nemaiah Valley FONV, n.d.). The Xeni Gwet'in First Nations Government successfully advocated for an Aboriginal Wilderness preserve, which also became the first mainland wild horse preserve in Canada. The declaration of the “?Elegesi Qiyus Wild Horse Preserve” was made in collaboration with Friends of the Nemaiah Valley (FONV, n.d.) and supported by partnerships with the government and other interest groups.</p> <p>Management The Xeni Gwet'in First Nations government seeks protection for the environment from large scale mechanized extractive practices and advocate for limited hunting in the area. Provide protection and surveillance for the wild horses by using rangers. FONV argues for horses to be protected as legitimate wildlife.</p>

As eluded to earlier, primary literature has referred to FRH as wild (Rikoon, 2006), feral (Salter & Hudson, 1978), stray (AESRD, 2014c; AESRD, 2014d), free roaming (Beever, 2003). The disagreement on how to define FRH can lead to difficulty when writing FRH management into law. The difficulty of not knowing how to legally categorize FRH was exemplified through the process of inaugurating new law for the

protection of the ponies of Bronson forest in Saskatchewan (Table 3.6). The ponies could not be protected under environmental legislation because they are not considered wildlife, similarly they could not be protected under agricultural laws because they are not considered domesticated and because agricultural laws are not involved in animal protection. The ponies are now protected as a living historical tourism attraction as well as for highlighting the Bronson forest for the future (Government of Saskatchewan, 2009). The Bronson ponies are a unique case because the community was mostly in agreement and brought forth the idea of promoting the protection of the ponies.

Perceptions of FRH in Alberta are not as homogeneous. Interested parties appear not to be in agreement in what the horses mean to people and how they should be managed. Finding agreement among interest groups on definitions regarding FRH is not easy because there are covert and overt meanings tied to each definition, which in turn, affect how the horses are managed or written into law. I try to shed some light on the meanings tied to definitions such as feral and wild in section 5.3.4.

Table 3.6: Excerpts from Laws, Policies and Management of FRH in Saskatchewan

Saskatchewan: The protection of the wild ponies of Bronson Forest Act (2009) (Private members Bill 606).
<p>The first act in Canada specific to direct protection of FRH.</p> <p>WHEREAS the protection of the wild ponies of the Bronson Forest will continue to provide both a living and historical tourist attraction as well as highlight the Bronson Forest for the future;</p> <p>WHEREAS this Assembly recognizes the value and unique nature of the wild ponies of the Bronson Forest; and</p> <p>WHEREAS over the years the number of wild ponies in the Bronson Forest have been declining due to unwelcome interference.</p> <p>The wild ponies of the Bronson Forest are hereby protected. No person shall in any way willfully molest, interfere with, hurt, capture or kill any of the wild ponies of the Bronson Forest.</p> <p>Management</p> <p>Horse numbers declined significantly, current management focus is to protect current horse numbers.</p>

In Alberta the Environment and Sustainable Resource Development (AESRD) department manages FRH under the Stray Animals Act (Table 3.7). Although FRH live independently from humans, in Alberta they fall under the stray animal act (AESRD, 2014a). The AESRD website states that “concerns” about the treatment of horses captured on public lands resulted in the creation of horse capture regulations that are appended to the Stray Animals Act (AESRD, 2014a, par. 4). Respondents reported that there are pockets of FRH in isolated areas. Over 2000 horses were removed from the study area between 1962 and 1972 (Salter & Hudson, 1978) and 300-420 horses have been captured since 1997, however, the gap in the data (missing captured numbers from 1972 to 1997) suggest an underestimate of the actual number captured. Now, approximately 880 free roaming horses remain in the proposed study area (AESRD, 2014d). Given that at one point there were 2000 horses to capture alone it appears that under AESRD management FRH numbers have been decreasing over time. That is not to say that local herds may experience fluctuation in numbers and become problematic in some areas or that people may release owned horses onto the land.

Table 3.7: Excerpts from Laws, Policies and Management of FRH in Alberta

Alberta
<p>FRH in Alberta fall under the Stray Animal Act (AESRD, 2014a; AESRD, 2014d). Alberta's Sustainable Resource website states that "concerns" about the treatment of horses captured on public lands resulted in the creation of horse capture regulations that are appended to the Stray Animals Act (AESRD, 2014a).</p> <p>Amendment to the Stray Animals Act: Horse Capture Regulation in 2008 included the following:</p> <ul style="list-style-type: none"> • Provide better protection of the feral horses by ensuring weapons are not used to capture feral horses and removing any reference to "hunting" • provide clarity between designated and public lands • provide the ability to waive license fees to ensure horses are removed from areas where they are creating safety hazards <p>The regulation</p> <ul style="list-style-type: none"> • continues to prohibit the use of snares as a method of horse capture <p>Provides for limits on</p> <ul style="list-style-type: none"> • the number of horses that can be removed • when they can be removed • where they can be captured • in what manner they can be captured <p>Management</p> <p>Horse capture regulations involve applying for a capture permit (\$200). The permit system is used to manage horse numbers. An average of 10 permits are issued yearly with an average of 25-35 horses being removed.</p>

In 1994, all 1201 horses (likely the largest population of FRH in Canada) were removed from the Suffield military base in Alberta (Bakyta, 1998). The controversy surrounding FRH on the Suffield military base in Alberta was complex but consisted partially of government and certain environmentalist groups (The World Wildlife Fund and The Alberta Wilderness Association) which primarily cited the negative impacts that FRH were having on native wildlife species and on range health. As a result, all of the horses were removed from the area. Interested people who belong to a different camp of thought, and were advocates for the horses to remain, continue to question what they

believe was an undemocratic process based on unsubstantiated ecological arguments used to remove the horses (Dickinson, 2009).

3.3.3 United States and FRH

The U.S. government continues to struggle with public opposition to FRH and burrow policy and management as well as with the cost of removing hundreds of animals and finding ongoing homes for adoption (BLM, 2014). In the U.S.A., FRH are protected as historical heritage animals (Table 3.8) (BLM, 2009). The Wild Free-Roaming Horse and Burro Act of 1971 states,

wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West; that they contribute to the diversity of life forms within the Nation and enrich the lives of the American people; and that these horses and burros are fast disappearing from the American scene...[free-roaming horses are an] integral part of the natural system of the public lands” (BLM, 2009, par. 1).

Despite the act quoted above, controversy surrounds current numbers of FRH in the U.S.A. Two vehemently debated examples include, overpopulation of FRH or reduced amounts of land allocated to the animals, depending on the camp of thought one belongs to. The U.S.A. government runs an extensive management program which consists of monitoring FRH numbers, rounding up ‘excess’ horses, providing short term and long term holding areas as well as veterinary care and finding appropriate homes for adoption.

In some areas, increased numbers of horses or decreased amount of land available to the horses results in competition for forage. Land that is in demand for recreation, development or grazing is in direct competition with land needed by FRH; as human uses of areas where horses can roam increases the land available to sustain FRH decreases. Maintaining specific numbers of FRH often requires animal control and results in protest

and disagreement among interested parties. Recent struggles with FRH numbers have led to proposed policy changes suggesting euthanizing healthy animals because of a decrease in adoptions (GOA, 2008).

Table 3.8: Excerpts from Laws, Policies and Management of FRH in the United States

United States
<p>Federally protected as historical heritage animals since 1971 by the Bureau of Land Management (BLM) under the Wild and free-roaming horses and burrows act (US Congress, 1971).</p> <p>The Public Rangelands Improvement Act (Public Law 95-514) established and reaffirmed:</p> <ul style="list-style-type: none"> • the need for inventory and identification of current public rangeland conditions (through monitoring); • the management, maintenance, and improvement of public rangeland conditions to support all rangeland values; • the continuance of provisions protecting wild free-roaming horses and burros from capture, branding, harassment, or death while also facilitating the removal of excess wild horses and burros that pose a threat to their own habitat and other rangeland resources; • and the transfer of the title of ownership after one year to individuals that adopted wild horses and burros removed from public rangelands, so long as the animals had received humane care and treatment during that year. <p>Management</p> <p>The objective is “management of wild horses and burros as an integral part of the natural system of the public lands under the principle of multiple use; protection of wild horses and burros from unauthorized capture, branding, harassment or death; and humane care and treatment of wild horses and burros”</p> <p>State and geographically specific herd numbers are monitored and adjusted based on perceived acceptable population levels.</p> <p>Management techniques include: round up, adoption, contraception (Card, 2010, p. 15)</p>

The conflicts and resulting laws and policies dealing with FRH illustrate some of the geographic, cultural and values-based differences in specific areas in N.A toward FRH. Detailed information on the socio-geographic differences in law and policy and

explanations as to why they may exist, may help in narrowing and localizing the problem, the policy process and resulting laws and may lead to borrowing from policies that have worked well in areas with some similarities. Management of FRH is a wicked problem addressable through democratizing the continuously evolving social policy that needs to include local values held by various interest groups and individuals.

Policies and legislation cannot be separated from people or from the socio-cultural arena. The socio-cultural arena gives an explanation of the people and groups of people I found to be involved in framing human-FRH interactions. Given the review above, FRH are not consistently legally valued across Canada. Geographic discrepancies exist and various local and political human values describe the animals differently and provide various/diverse reasons for policies extended toward the animals. I hope my research contributes in some form to informing future direction of policy extended to FRHs of Alberta.

3.4 Socio-Cultural Arena

This section reviews the socio-cultural worlds engaged with FRH and examines interconnections between the worlds. I argue that cultural aspects regarding FRH have often been neglected because of their messy and possibly unsolvable nature. The socio-cultural arena is difficult to review because of the overlapping, multilayered, interconnected and seemingly loose and constantly moving boundaries. Discourse on FRH is continuously produced and reproduced. Section 3.4 begins to answer my research questions about how local cultures have historically and continue to, contemporarily interact with FRH.

I focus on the overlap of the respondents and interest groups to highlight some of the intricacies, complexity and wickedness upon which I base human-FRH interactions. I concur with others (Lazarus, 2009; p. 1159-60; Head & Alford, 2008; Levin, Cashore, Bernstein & Ault, 2012) who identify wicked problems as incomplete, contradictory, as possessing changing requirements, and complex interdependencies. Public policy researchers that focus on wicked problems often suggest solutions or ways to understanding the problem that are very similar to the pillars upon which my research rests (Table 3.9).

Table 3.9: Literature Review: Focus of, and Solutions to, Wicked problems

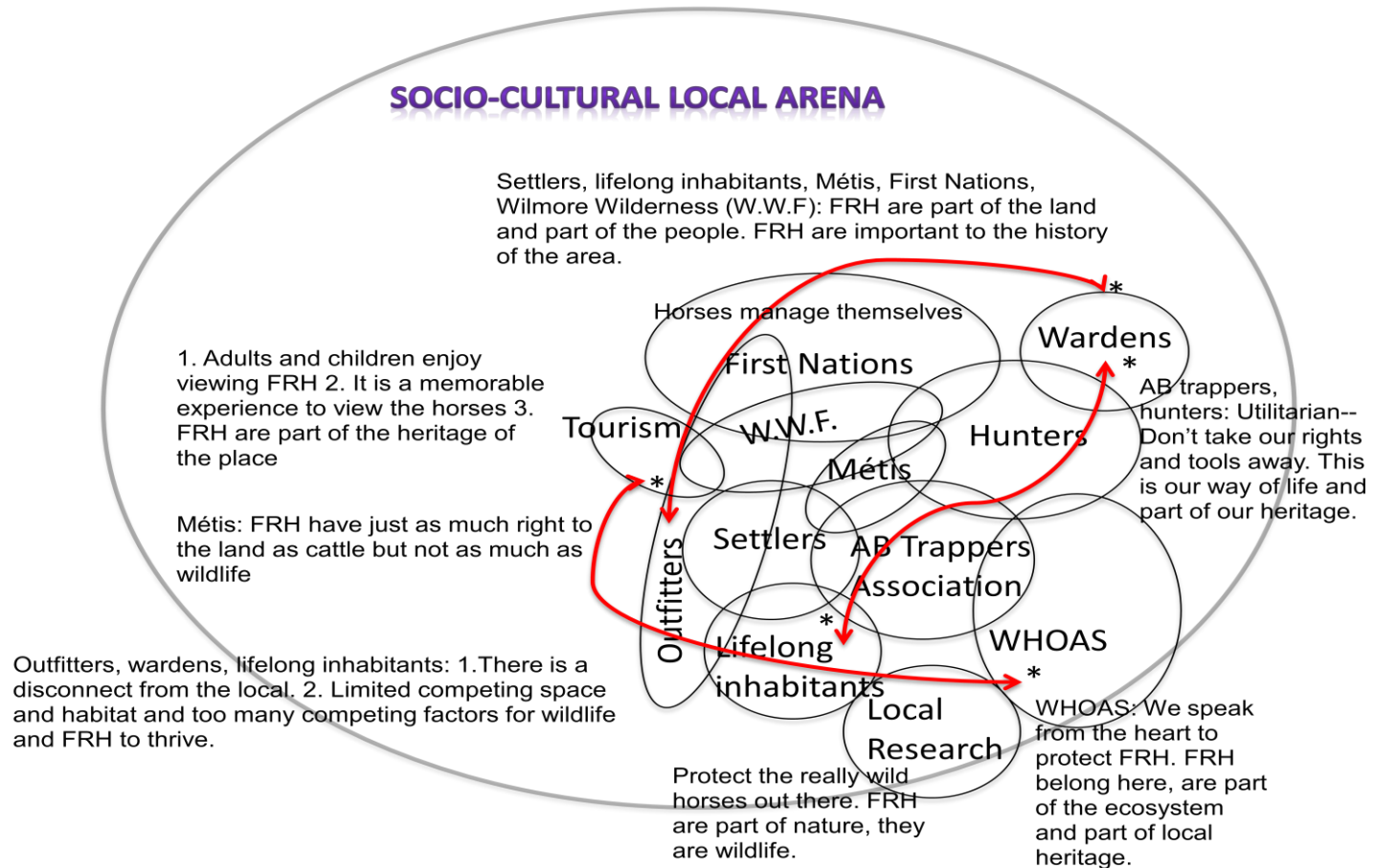
- | |
|---|
| <ul style="list-style-type: none"> • Fundamentally, wicked problems are a social process. • Focus should be on: value sharing rather than debate, inclusiveness, courtesy and respect, high levels of thinking to make connections among complex interdependencies, multidisciplinary understandings, holistic rather than linear thinking and understanding of the issue and an explorative flexible approach. • Solutions for wicked problems with social complexity require involvement from multiple organizations, stakeholders, NGOs, local people and affected communities (hence why I employ the arenas and worlds social models). |
|---|

(Head & Alford, 2008; Lazarus, 2009; Levin, Cashore, Bernstein & Ault, 2012)

Conflict associated with FRH is often presented as natural science based (FRH feeding habits, FRH population numbers etc.) but I would argue that social and cultural factors play a larger role than scientific factors in the debate. Clark and Rutherford (2005) affirm that the management of animals is primarily a social process. I uncover some of the complex and locally embedded social interdependencies here by reviewing values, attitudes and positions of interest groups and individuals locally involved with FRH (Figure 3.5).

Figure 3.5: Socio-Cultural Worlds in the Local Arena

*Red arrows indicate that worlds are connected



3.4.1 Overview of Socio-Cultural Worlds

Socio-cultural worlds are connected and overlap a great deal. I include a brief review of local discourse on the horses and how people within one world perceive people from another world. Improving the understanding of how worlds and interest groups view one another can lead to building bridges, if and when that is the intention, or to creating a wider understanding of existing perspectives. Stereotypes may also be revealed and dealt with when examining how groups view one another.

It was difficult to visually show overlap in worlds where groups of respondents belong to more than one world. I depicted such overlap by using the ellipses in the socio-cultural arena figure (Figure 3.5) and, in the matrix below (Table 3.10). The socio-cultural arena figure is used here to introduce the reader to the worlds and general topics of the research. Where the levels of overlap between the worlds are inadequately illustrated by the socio-cultural arena figure, the matrix I created is an alternate representation. The matrix is used to show the overlap between worlds and individuals in a more detailed manner. Depending on the focus of discussion both portrayals may miss showing some of the overlap and connectivity due to the limitations of 2D graphics (unable to capture complexity).

Table 3.10: Overlapping Respondent Worlds

Overlapping worlds of interest groups and individuals	Wardens	WHOAS/ protection	Indigenous	Métis	Outfitters	Tourism	Acreage inhabitant	Permit inspect	Ranchers and lessees	Trappers and hunters	WWF	Local research	Settlers	Lifelong inhabitants	Breeders	Horse capture
Wardens	x															
WHOAS		x			?											
Indigenous			x				--								--	
Métis				x												
Outfitters		?			x			?								
Tourism						x						?				
Acreage			--				x									
Permit inspector					?			x								
Ranchers/ lessees									x							
Trappers/ hunters										x						
WWF											x					
Local research						?						x				
Settlers													x			
Lifelong inhabitants														x	?	
Breeders			--												x	
Horse capture																x

Both blue and grey shaded squares indicate overlap between respondents. Blue shaded squares are primarily historically relevant but may continue to play a contemporary role. Respondents in the blue shaded category may belong to both shaded worlds. Gray shaded squares are primarily contemporary. ---- dashed lines indicate geographical overlap or proximity.

3.4.1.1 Local Politics

I briefly review the political landscape of the area to provide a backdrop for political values, attitudes and potential behaviours. Politically, the area studied has deep roots in Conservative politics (Table 3.11). I would argue that much discourse presented by respondents is framed within conservative values and orientations. Conversations often indicated that respondents mistrusted government and preferred less government interference, which is typical of Conservative rhetoric, although there were exceptions to this position (Editors, 2010). For example, greater government presence was advocated for by respondents, in the form of local conservation officers being present in communities and on the landscape to patrol the area.

Table 3.11: Voting Trends in the Research Area

Voting Results (Area)	Political Party	Number of Votes (Overall Percentage)
Sundre, Rocky Mountain House, Rimbey Elected Tories since 1971 in this area	Wild Rose Party (WRP)	7, 647 (51%)
	Progressive Conservative (PC)	6, 145 (41%)
West Yellowhead, Hinton, Jasper PC majorities since 1997	Progressive Conservative (PC)	4, 405 (45%)
	Wild Rose Party (WRP)	2, 642 (27%)
	Alberta Party	1, 668 (17%)

<http://alberta.ca>

3.4.1.2 Protectionist Oriented World(s) and WHOAS Worlds

Many WHOAS members interviewed were likely politically conservative, despite the way they were described by other respondents. Political affiliation was not discussed during the interviews, however, given the voting history of the area and comments made, some WHOAS

members are likely Conservative. Generally ‘animal rights’ people were often described as ‘outside’ of local communities, as were their ways of thinking. Those outside of the protectionist world(s) often thought of FRH protectionist groups (including those in WHOAS) as ‘bunny huggers’ and as unreasonably protective toward FRH. Ironically those who supported FRH protection were often not ‘animal rights’ centered in the traditional sense. For example one WHOAS member supported horse meat packing plants or the use of ropes to capture and lasso the horses. Despite the perception that protectionist oriented people did not understand challenges faced by those working on the land, several respondents who supported FRH protection did have grazing land leases and most were locals that were part of the community.

Reflexive Excerpt 3

Before my fieldwork began, I stereotyped protectionist based NGOs advocates of FRHs as left of centre politically. What I had not anticipated was that a left leaning protectionist group in the heart of conservative country would be hard to come by and in the end look much differently than I had originally thought. Typically most members of WHOAS I interviewed wanted FRHs protected in the sense that they remain on the landscape with minimal negative disturbance. What I did find surprising was that some FRH protectionist oriented respondents agreed with horse-meat packing plants (and with FRH sometimes being processed there). Another surprising practice (to me) that some WHOAS or other protectionist oriented respondents supported was that of FRHs being captured with the use of ropes. These practices seem distant from those that stereotypical animal protection activists would support.

3.4.1.3 Outfitters and Horse Capture Practices Worlds

Outfitters are an historic part of the area and outfitting continues to be practiced in the area. Historically, primarily Europeans and Americans engaged in trophy hunting. The outfitter category and the horse capture category had the most overlap with all the other worlds. To clarify, most categories overlapped with outfitters and horse capture but that does not mean that all individual respondents overlapped between select categories. I explain the considerable

overlap of local outfitting and horse capture as intertwined because these activities played and continue to play a significant historic and contemporary role in the area. Those interviewed were often older with life long and multigenerational experience in the area. Their involvement with horse capture and outfitting may be a reflection of their generation as well as the local cultural landscape.

3.4.1.4 Indigenous, Métis, Settler Descendents, Lifelong Inhabitants Worlds

Indigenous people have an intimate, multigenerational knowledge of FRH, and the horses have cultural relevance to Indigenous people in the area. Generally, Indigenous people in the study area shared some values with Métis (Mountain Métis, Willmore Wilderness Foundation) and multigenerational settlers. FRH were traditionally used by these populations and became a valuable part of their culture. FRH continue to be used by some Indigenous, Métis and multigenerational settler descendents.

One difference in worldviews toward horse management in general was displayed between one horse breeder and Indigenous perspectives. Indigenous people articulated that FRH or horses on the reserve manage themselves whereas a horse breeder living in close proximity to a reservation viewed horses as a threat to his well being, as being out of control and “coming onto our land”. I juxtapose another perspective from an acreage owner also living in close proximity to a reserve against the comments of the breeder (dotted lines in Table 3.10). She described the horses coming off the reserve as enjoyable to watch, as having freedom and space on the reserve, as spiritually important and as having a right to be on the land. The acreage owner commented that her neighbours felt similarly. They gave names to the horse herds, counted foals,

and observed and photographed them as a leisure activity. The respondent living on the acreage had the least overlap with all the other categories. This may be in part, because of the proximity of the acreage to Calgary and as a result because of the disconnect to cultural practices and ways of life of those living further from urban centres.

3.4.1.5 Alberta Trappers Association and Hunters Worlds

Reflexive Excerpt 4

One world of which I was completely unaware and did not anticipate at the outset of my fieldwork was that of trappers. During my interviews two respondents were representatives and advocates of The Trappers Association of Alberta. Trapping is an activity that does not align with my personal values. Surprisingly some arguments made in support of trapping crossed paths with arguments supporting FRH. Respondents involved with trapping indicated that trapping in Alberta is considered a heritage activity with deep cultural roots. Similarly some respondents also made heritage and cultural arguments in support of FRH. Exploring these arguments is beyond the scope of my research but I find it unsettling that these similarities were brought to my attention. Research is messy, as are the discoveries and the feelings they elicit. In light of being as honest as possible and maintaining my integrity as a researcher I include this short reflection with which I struggle. Although I admit to knowing very little about trapping I am not in agreement with the potential pain and suffering it might cause wildlife but I do support FRH as relevant cultural, heritage animals.

Hunting is an activity practiced by many respondents and generally by people in the research area. Trapping played a significant historic role in the area. The Alberta trappers association advocates protecting the practice of trapping as a historic and cultural part of local heritage. I was unaware that trappers continue to hold trap lines in the area. Trappers are one example of a world I became aware of through my research.

3.4.1.6 Wardens, Outfitter, Tourism Worlds

Wardens historically spent a lot of time on the land and played a stewardship-like role in the area. Those interviewed witnessed many changes over their lifetime. Wardens had a wealth of information regarding historic distributions of FRHs, FRH behaviour, and FRH population changes. In addition, some wardens participated in outfitting activities where horses were captured, used and then released for the winter months.

Tourism and outfitters are linked because local outfitters have historically and continue today to offer a form of tourism (hunting, outdoor camping adventures, sightseeing, horseback riding, trophy hunting etc.). Outfitters continue to use horses for long excursions. In the past horses were released onto the land and then gathered when they were needed in the Spring. Respondents reported that when horses were released onto the land some were not seen for a few years and then they were found again in subsequent years. Some horses were not found or used again and respondents suggested that these horses may have contributed the FRH populations in the area today.

Tourism related to FRH is relatively limited in the area. Tourism is linked on a small scale to WHOAS and two local outfitter operations (Notzke, 2014). For example, tourism is used by WHOAS to promote protection or to argue that FRH belong within a local heritage realm. Currently, however, tourism related to FRH in the area is minimal. In Saskatchewan tourism was used as part of the reason to qualify the Bronson Ponies for legislated protection (section 3.3.2).

Not all respondents involved in FRH tourism advocate for FRH protection. One large cattle business and tourist working (dude) ranch, offering FRH viewings and selling captured, free roaming horses, spoke against FRH protection.

3.4.1.7 Local Research Worlds

The local research world straddles that of the research arena discussed at the beginning of this chapter and the socio cultural arena. I have chosen to introduce local research here because it is more closely related to local social and cultural advocacy and reviews some local practices related to FRH. In Table 3.12 I provide a synopsis of the local literature used to inform cultural aspects related to FRH. The sources outlined here are referred to and revisited often throughout my work. Two respondents were directly involved and led ‘research’ referred to in Table 3.12 (and two respondents were indirectly involved). The Willmore Wilderness Foundation (WWF) as well as the Rocky Mountain Traditional Research Institute (RMTRI) advocate for local knowledge, traditional values and land uses set forth by early guides, outfitters, trappers, Aboriginal and Métis. The WWF refers to the group of people described above as mountain people or in specific cases as the mountain Métis (see further description of mountain Métis people in section 5.1.3). When I use the terms WWF, RMTRI and mountain people I am often referring to members from all groups because they are interconnected with many of the same members (see Figure 5.2). I use the term mountain Métis when referring specifically to that group.

Table 3.12: Locally Based Literature and Local Research

Reference	Description and position of source (Locally oriented websites, films, books, art)
Willmore Wilderness Foundation http://www.willmorewilderness.com/	“The Willmore Wilderness Foundation preserves the history of the area; focuses on the advancement of education of the park; restores historical pack trails and sites; and enhances the use of Willmore Wilderness Park for Albertans and visitors alike.”
Mountain Métis http://www.mountainmetis.com/index.html	“This is the story of the Mountain Métis, the first to arrive in Alberta and British Columbia. We share a historical account of the descendants of the fur trade who have over 200 years of wildlife and wilderness management on Alberta's eastern slopes.”
Galileo Educational network. University of Calgary. Wild and Free. http://www.galileonetwork.ca/wildandfree/	“Elders from the Stoney Nation (Knowledge Holders) share their wisdom and spiritual connections with the wild horse and the land they inhabit, while conservationists, ranchers and others weigh in on a variety of issues.”
Rocky Mountain Traditional Research Institute (RMTRI) http://www.traditionalresearch.com/	“Rocky Mountain Traditional Research Institute's (RMTRI) mission is to have traditional knowledge recognized as an equal and valid source of information and research, to complement scientific study.”
Susan Feddema-Leonard (Author, film producer, director, editor) http://www.peopleandpeaks.com/index.html Documentary/Film-“Wildie” Book-People and Peaks of Willmore Wilderness Park	Film “Wild horses have long inhabited the Canadian Rocky Mountains. During the 1950s and 1960s the Alberta Provincial Government sanctioned roundups of the 'wildies.' Despite the attempt to eradicate the herds from Alberta's eastern slopes, horses still run freely today. Many young and old horse lovers have dreamt about catching wild horses—breaking them to ride....” “We know that Canada, especially western Canada, was pioneered by hunters, trappers and mountain people and, of course, by Canada's First Nations peoples. But seldom are we provided with a modern-day, close- up view of the day-to-day lives and activities of these people...”

Reference	Description and position of source (Locally oriented websites, films, books, art)
Maureen Enns (Artist, painter, photographer, conservationist, author) http://www.maureenennsstudioltd.com/ Art work-Connections over time and space	“I had recently seen a few wild horses in the Ghost Forest and realized very few things of cultural and historical value are treasured until they have long disappeared. Such was the case with the Inca Civilization and was likely to be the case with the wild horses of the Ghost Forest.”
Book-Wild horses, wild wolves: Legends at risk at the foot of the Canadian Rockies	“Using a combination of art forms and traditional stories told by Peigan and Stoney Nakoda people, Enns invites the reader to join her as she untangles old myths regarding Alberta's heritage and reveals some uncomfortable realities facing the province in the 21st century.”

3.4.1.8 Permit Inspector World

The permit inspector (84 years old) in the area who has a lifetime of experience observing, capturing and taking care of FRH and horses in general had a wealth of information regarding FRH. He has deep roots in the community, experience with policy related to FRH, and direct observations on FRH populations and how they have changed over time. In addition he was directly involved in horse capture and possesses a multitude of observations regarding horse capture methods and practices. He holds a protectionist based orientation toward FRH, supporting horse management (limiting males) and on-the-ground practical policy consisting of the inspection of horse capture practices.

3.4.1.9 Ranchers/Grazing Leases Worlds

These worlds are diverse and ranchers and land lease people occupy a broad spectrum with regards to supporting or opposing FRHs. Historically, and similar to outfitters, cattle grazers would release horses onto the land and capture them again when they were needed. Typically horses were released to graze during the winter months and captured in the Spring and Summer for outfitting ventures. Bhattacharyya (2012) found similar results in the Brittany Triangle and Nemiah Valley of British Columbia. Indigenous people and ranchers historically, and some currently, turned out horses for the winter. In that particular cultural setting the length of time varied between being released nightly to seasonally. In Alberta, due to land use competition, legislation forbids capture and release practices and sought after grazing lands are carefully monitored by the government and cattle industry. Currently, releasing horses is viewed as unlawful by the Alberta government however there may be specific areas and cultural situations where such activity may be permissible. The end result for decision makers to working with communities on mutually beneficial solutions could be less opposition to government decisions and relationship building.

3.4.1.10 Government and Industry Worlds

The government was often discussed during interviews because they are the governing body that currently implements policy regarding FRH. Respondents viewed the government as not responding to local needs (section 5.1.2, 7.9.7). The government was also viewed as not taking an active stand and failing to act one way or another toward FRH. Some land lease holders also viewed FRH protectionists as too influential in regard to FRH policy. Similarly,

Indigenous respondents commented against ‘animal rights’ oriented people and criticized anti-hunting perspectives. One potential solution to such divisive views, suggested by respondents participating in this research, could be to create local working groups (see section 7.9.9, 6.4, 6.5).

Worlds outside of forestry from protectionist minded groups and individuals commented on forestry’s lack of science-based information while forestry and a large cattle business manager argued the same lack of empirically based scientific information from FRH protectionist groups. Disagreement of what constitutes ‘science’ is one example that was frequently addressed by respondents from different worlds and illustrates how the theoretical approaches I have chosen, complement wicked problems and the complexity of informing policy on FRH.

My purpose in this section was to generally introduce and provide a base for the interrelated perspectives in the socio cultural arena as well as review varied sources related to FRH and the socio cultural arena. Sections 3.4.1.1-3.4.1.10 provide a good beginning to start answering the research question on how local people continue to interact with FRH. Sections 3.4.1.3, 3.4.1.4, and 3.4.1.5 provide a general description of local historic interactions with FRH. The results section presents detailed quotes and discussion on all individual respondents and positions on FRH. Before I present the results I describe the methods used throughout the research process.

CHAPTER 4: METHODS

In this chapter I describe the logistics of field research, three separate phases of data collection and I close the chapter with a description of data organization and coding. Research becomes alive in the field, changes and provides unanticipated challenges at every turn.

4.1 Interview Guide and Interview Logistics

I used a semi structured interview guide that I developed at the onset of my first field season. The questionnaire was submitted and approved along with my ethics application to the University of Calgary. There were three versions of the questionnaire geared toward different knowledge groups: 1. Landowners, Landusers, Industry, 2. Managers (those in leadership and decision making roles), 3. Indigenous elders, settler elders and those with historic information (see interview guide Appendix 1). Set central questions were asked of all respondents but those with unique knowledge contributions were asked additional questions. The interview guide was treated as a guide, in that conversations were encouraged to stray from the questionnaire to provide unique contributions and perspectives.

Upon meeting those who agreed to be interviewed I introduced myself, described the project, explained sections of the consent form and asked respondents if they agreed to being audio taped, if they consented to their organization's name being used (if applicable), if they wished to remain anonymous, and if they were comfortable with being quoted and their name used in print (Table 4.1). Next I followed the interview guide unless the respondents started to share stories or perspectives without being prompted. I tried to return to the central questions once respondents were finished sharing what they felt was most pertinent. Maps were used to

help identify where respondents saw horses, how many and how populations had changed over time. Also when questions required respondents to agree or disagree with statements or to rate them in order of importance I used cards with individual statements written on each card to help respondents organize their thoughts. I wanted to create a tactile experience where respondents were required to categorize and respond without me prompting or guiding them in any way. Some respondents were not comfortable using the cards or the time required to read them. I relied less on the cards during my second and third field season due to the cumbersome nature and the lack of enthusiasm displayed toward the use of cards.

Table 4.1: Interview Specifications

Interview location	*Audio-recorded	Consent for organization name	+Anonymity	Use of quotation and name
Telephone 7	Yes 16	Yes 15	Yes 11	Yes 22
Trailer 1				
Home 7		No 5	No 13	No 2
Local establishment 9	No 8			
Total =24	Total=24	Total=24	Total=24	Total=24

*I was unable to record telephone conversations

+some respondents requested to be anonymous but consented to being quoted and their name used

The interviews were meant to be approximately half an hour but given the interest of the respondents and the depth of material most interviews extended well beyond one hour and sometimes into an additional follow up day. Some interviews extended to half a day or more where respondents took me to view the horses, shared family biographies, publications, historic documents, photographs, journal entries, and art. I believe the depth of knowledge, information and interest displayed in the topic by many respondents speaks to the quality of information

obtained. The level of understanding that I gained was so much richer than if I had simply mailed out standard questionnaires or strictly conducted telephone interviews. Face to face interviews allow the interviewer to see and feel the emotion that the respondents are displaying. Also, camping in the communities where research was conducted provided a chance for me to familiarize myself with the social and physical geography of the area, which led to a better understanding of the problems or land marks, for example, of which locals spoke. There were instances where I had to resort to telephone interviews due to financial constraints, temporal limitations, unattainable distances, obstructions due to weather (hail and tornadoes), or respondent unavailability. Interviews were held wherever respondents felt most comfortable and where it was most convenient for them. I meet with many in their homes, cabins and ranches and others at local restaurants, coffee shops, and fast food establishments. One interview was conducted at a local museum, one at the Medicine Hat college, one at the University of Calgary and one respondent met me at a park where we conducted the interview in my trailer (see section 4.4). All interviewees were asked for permission to be audio taped. I asked all respondents for consent to be audio recorded so that I could provide accurate and transcribed accounts following the interviews. One Indigenous interviewee did not consent to being audio recorded. All the other interviewees that were able to be audio recorded consented.

4.2 The Lived Experience of Field Research

During my first field season my youngest son was one year old and my oldest was three years old. As a family, we decided to camp in the areas where I was conducting research due to the flexibility of being able to access areas easily as well as being able to change locations

relatively quickly. We pulled a small trailer behind our mini van and were dangerously close to being buried in mud on several occasions. We also lived through several tornadoes during two separate field study seasons. The logistics of meeting interviewers in remote areas was time consuming given the distances required to traverse from one interview to the next. The need to feed my youngest child, and the chaotic and sometimes unpredictable schedule, resulted in several tense situations between my spouse and myself but overall I had a great support team behind me. I kept field journal notes throughout my field seasons; the discussions that took place with my spouse during the lengthy post-interview drives contributed to (my) reflexivity. Not one respondent responded negatively toward my entourage. One unexpected outcome was that people were often more open and accepting when, instead of a solemn researcher they were presented with two small children and myself. Camping with my family in tow provided a connection to many people and perhaps an 'insider' commonality or at the very least a non-threatening preamble to an introduction. Often I was dropped off at the location of the interview but on several occasions my children were invited to stay. There were a few occasions where remote interviews caused some concern for my safety. My partner carried a cellular telephone that had intermittent service dependent on the location, took pictures of remote locations and respondent vehicle license plates, and promptly returned to pick me up at the agreed upon time. All photos of license plates and other identifying information were deleted upon the completion of the interview.

Plate 4.1: Picture of a Tornado Encountered Near Sundre



4.3 Consent and Potential Harm to Respondents

To my knowledge respondents experienced no harm as a result of participating in my research. I have tried to represent all respondent contributions to this research fairly and with respect so that they do not feel their time was wasted or perspectives misconstrued. While seeking respondents who had contact with FRH I focused on those who were locally considered as experts and had longitudinal experience. Due to these dynamics I was informed that several potential interviewees had passed away. For that I immediately expressed my condolences. One potential respondent that was considered an ‘expert’ on FRH by local FRH proponents and opponents had passed away before I had a chance to interview him during my second field season. Fortunately, some of his knowledge is preserved in other interviews, local literature, and the community in general (Feddema-Leonard, 2007). Several respondents spoke of him and paraphrased his knowledge.

Reflexive Excerpt 5

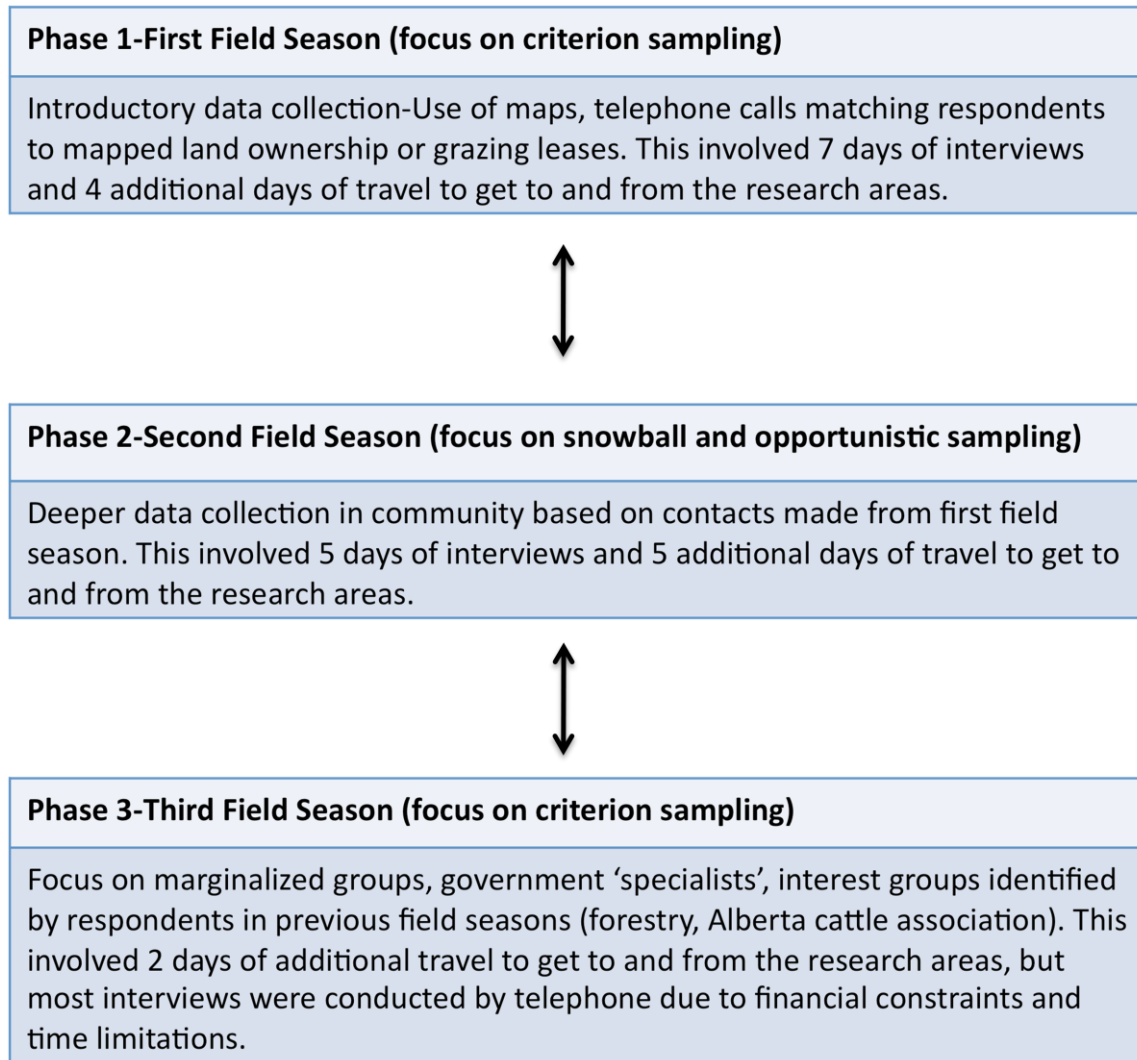
Many respondents began to share information, books, pictures and stories as soon as we met and before I had the chance to present them with a consent form. Having to take out the consent form and thoroughly go through it, at times, caused an unnatural break in the conversation. In the future I might consider discussing consent and related information upon first contact (telephone), once there is agreement for participation. That way upon meeting, all that is required is a signature and to address any questions that respondents might have.

I noted that many respondents who wished to remain anonymous at the same time consented to being quoted and having their name used. In the future I will verbally provide a clearer definition of anonymity. Also, the consent form was too lengthy; I would like to suggest that future consent forms be simplified and streamlined to suit the specific type of research being conducted.

4.4 Three Phases of Data Collection

Respondents who had an interest (various combinations of positive and negative) in FRH were interviewed in their homes, places of work, my trailer, or local meeting places. Getting to know the area geographically and socially was beneficial in acquiring far-reaching knowledge and allowed me to experience valuable social contexts. Also interviewing people in their homes often led to informants presenting me with further material that they had acquired on the horses (pictures, books, family history). Community leaders and ‘gatekeepers’ were often found on websites, their names cited over and over by others, found in popular literature and identified by the media. I divided my field seasons into three sections. Each had a slightly different focus but overlap was present between all three phases (Figure 4.1). In the next section I expand on each phase of research.

Figure 4.1: Three Phases of Fieldwork



4.4.1 First Field Season

During this phase I focused on the socio-cultural aspects of the research area as well as interest groups and individuals. Broad primary research and local background information was collected. Collection of material included academic publications, discussions with professors suggested by committee members, government publications (ASRD) and field visits to multiuse

areas (forestry), media (publications, radio presentations, videos), interest group websites, local maps and literature, related local art and tourist venues such as information centres, Ya Ha Tinda a federally operated working horse ranch (that refused to participate), and protectionist group WHOAS. I proceeded to contact people and interest groups listed on websites and elsewhere that were involved with FRH.

Next, I obtained maps from the University of Calgary MADGIC library (maps academic data and geographic information data). Maps contained names of landowners, ranching land, grazing leases and grazing land, gas companies using the land, Indigenous reservations, ranches and timber companies. I only used maps that were within the area designated by the government as the free roaming horse capture zone. The maps are dated because of changes in policy related to privacy or to the costs related to acquiring the maps for the MADGIC library. Using these sources, I listed the names of people (from the maps) living or working in or close to the horse capture zone and used this listing to begin making contacts. Table 4.2 contains the maps used and the number of names chosen to contact. I identified people who seemed to have large tracts of land that might have FRH on them, and also people with grazing leases. Other criteria for selection included ease of access (within driving distance).

Table 4.2: Locations of Potential Respondents

Map (Area of focus)	Number of names chosen
Municipal District of Bighorn No. 8 (2004) located between Calgary and Banff National Park hwy #1 runs through it	29 names
Municipal District of Rockyview No. 44 (2005) Airdrie and Cochrane area. I concentrated on the area surrounding Cochrane and Stoney Reservation	44 names
Mountain View County (2004) Sundre and surrounding area	74 names

Following the acquisition of the names of landowners in the area I used www.canada411.ca to find contact information for landowners, gas companies, forestry operations, ranches and grazing lease holders. I quickly realized that the dated maps and the difficulty of matching surnames on the maps with often numerous or non-existing surnames listed in the 411 directory, left me with a short list. The onerous task of sifting through hundreds of names presented on the maps, choosing those that seemed accessible and that may have had contact with FRH and then telephoning a (sometimes) less than receptive audience was discouraging but this effort did provide an 'in' to the community and to my first field season of scheduled interviews.

Conducting research using the telephone has become very difficult (because of saturation by telemarketers, among others). People who remained on the telephone long enough for me to explain my work were often helpful and pointed me in another direction or suggested names or locations that might be more relevant. I did obtain several telephone numbers of suggested participants from cold calls. People who gave me alternative contacts assured me that those I was contacting would not mind me approaching them. Once I made contact with suggested 'experts' all were receptive to my contact.

Reflexive Excerpt 6
The oversaturation of telephone based research or information gathering, legitimate or not, for profit or in search of knowledge, is a real phenomenon and leaves most people less than receptive to engage in conversations. I was discouraged at first but came to realize that the lack of enthusiasm was not personal but a result of daily telephone calls demanding information and time from people. The silver lining/result was that the quality of the respondents that did agree to meet with me were very knowledgeable and had a genuine interest in Free Roaming horses (both positive, negative and in between).

Script for telephone calls

When making telephone calls I used the following script to begin the conversation:

Hello my name is Adela and I am a PhD student at the University of Calgary. I am researching free roaming horses and attitudes toward them. I would really appreciate your input into my research. If I have your correct contact information and if you live, work, lease or own land in or close to where free roaming horses live could I come out to meet you at a place of your convenience?

If the response was 'no' or the person terminated the telephone call I proceeded to the next telephone number. If the person responded with a 'yes' I continued to say

It is important for me to get many perspectives toward the horses from people who share the land with them and if that is you I would really appreciate it if I could interview you.

4.4.2 Participant Selection

Following telephone calls a smooth and almost natural transition to snowball sampling took place. I concur with others who have found that hidden populations and groups that are not easily accessible are often revealed through snowball sampling (e.g. Watters & Biernacki, 1989). For example one respondent with a Métis background was discovered through snowball sampling. I agree with proponents of various forms of purposive sampling who suggest an ongoing analysis of sampling as a way to connect to the (re)formulation of the research question. I also concur that sampling should be an ongoing interactive process. I sculpted and chipped away at my research question during data collection and analysis. Watters and Biernacki (1989) reflect that data analysis should be constant, ongoing and used to adjust the recruitment of respondents and sampling techniques. I adjusted or rather added criterion sampling to the snowball sampling technique when I realized that I needed voices from additional worlds (e.g. in addition to those with grazing leases). Purposive sampling was the umbrella method used to select participants; triangulation was used by employing various forms of purposive sampling. There were elements of opportunistic, criterion and snowball sampling (Table 4.3).

Table 4.3: Descriptions of Types of Purposive Sampling Used in Research

Purposive sampling	Definition of specific forms of purposive sampling
Snowball or chain sampling	Participants identify other people involved in similar cases
Criterion sampling	Selecting for cases that meet a specific criterion such as ownership of grazing leases
Opportunistic sampling	The researcher remains flexible and follows new leads during fieldwork and takes advantage of the unexpected

Snowball sampling was used during my first field season. The shift to criterion sampling took place during my second and third field seasons; however snowball sampling continued to play a role throughout. Snowball sampling with an element of criterion sampling also helped in selecting respondents. When respondents suggested that I contact certain people or groups I often chose those respondents based on specific criteria. One criterion was underrepresentation (generally and/or in my research). For example, Indigenous people and their perspectives are generally underrepresented as are perspectives of groups that are not aligned with popular, mainstream views. Also, opportunistic sampling occurred throughout and often led to exciting interview opportunities. For example, I spoke to local people at the campground who were involved in local small scale timber operations. Elements of all three sampling forms were used throughout fieldwork. Contrary to predetermined and rigid sample designs, one of the most exciting components of my fieldwork was the discovery of new leads and having the flexibility to explore them. As a result of exploring new leads my research changed direction and evolved as I responded to the directions toward which the respondents pointed me. I concur that “if the researcher knew all the relevant variables and relationships in data ahead of time, there would be no need to do a qualitative study” (Corbin & Strauss, 2008, p. 57).

The difficulty was knowing when to stop interviewing and exploring new leads. I used the concept of ‘saturation’ stemming from grounded theory (Clarke, 2005; Strauss & Corbin, 1998, p. 143-162; Dey, 1999) as a way to identify when to stop collecting data (Table 4.4). I believe the main themes and topics were explored in depth and that they reached saturation. For example the theme of ‘FRH origins’ became saturated toward the end of the data collection process. Every new respondent after a certain point used answers that had already been stated by other respondents. The responses might have been shared using different combinations of arguments and reasons but the points made were not new, novel or original. I found it difficult to cease data collection because new leads continued to present themselves and additional groups and respondents could have made interesting and valuable insights to the research. I recognize that my selection of respondents excluded a wide range of views and perspectives but I chose most respondents based on direct experience with FRH as well as being situated locally. For example, I did not form a world consisting of conservationists (even though I did include one non-government conservationist and one government range ecologist focused respondent). Temporal, financial and logistical restraints required that I constrain the breadth of the research. Bradshaw and Stratford (2010) sum up participant selection by stating that “...in-depth interviews with a small number of the ‘right’ people will provide significant insights into a research issue.” (p. 75).

Table 4.4: Saturation: Knowing When to Stop Collecting Data

Seeking Saturation
<ul style="list-style-type: none"> • Saturation does not mean that all categories have been developed or explored but that all properties in the categories included have been explored in depth • No hot new issues or positions are popping up in new data • Nothing analytically useful is being collected • Reaching saturation in social maps: I worked with maps many times, added, deleted, reorganized them, could talk about relationships and every entry, and found that it was a long while since major changes were made. As a researcher, you think the elements presented are the most important elements to the stories. If all your work disappeared you could work your way back to all the major stories that tell about the situation.

* adapted from (Clarke, 2005; Corbin & Strauss, 1998; Dey, 1999)

Sample size is not the focus in qualitative research as it is in quantitative research (see section 2.1). My position on qualitative methods is thoroughly explained in the chapter dealing with theory. I conclude this portion by agreeing with Bradshaw and Stratford (2010) in that human interactions are not based on numbers and statistics but primarily on storytelling.

4.4.3 First Phase of Fieldwork (schedule)

Resulting from the telephone calls and knowledgeable people recommended to me, I created the following final schedule (Table 4.5). The schedule changed and evolved from the first version because people cancelled or switched their interview times. There were times when we arrived at a particular location to find out that the respondent was sick or could not participate. In order to minimize these cancellations I called the participant the day before the interview as a reminder and then made contact several hours before driving to the designated meeting (venue) place. Making contact frequently ensured that travel time and gas was conserved and my time used effectively when in the field.

Table 4.5: Interview Schedule Summer 2010 (Phase 1)

Thursday July 29 10:30am Cochrane 2:00pm Priddis	Friday July 30 Travel and set up camp am 2:00pm Sundre	Saturday July 31 10:30 Olds 6:00pm Calgary
Sunday August 1 10:00am Transcanada Creek trail	Monday August 2 10:00am Cochrane 3:00pm Bearberry	Tuesday August 3 Bearberry all day
Monday August 20 Morning Bragg Creek		

4.4.4 Second Phase of Fieldwork

Respondents provided contacts or names of people or organizations that they viewed as experienced with FRH, that are experts on FRH or possess considerable knowledge of FRH.

People or interest groups that were considered controversial both in support of and against FRH were also sought. Before, during, or after the interview, I asked most respondents for a list of people who might be interested or knowledgeable on the topic of FRH. I asked that identified individuals be approached by those providing the contact information to acquire consent to make contact. I asked respondents to recommend people who had similar and opposite inclinations toward FRH to those of their own.

During the second phase of research I made a transition where the focus shifted to more specific interest groups that were missed during the first phase of fieldwork. For example, underrepresented perspectives such as those of aboriginal people were included. During the first

phase of interviews many people made references to aboriginal people and culture but I did not have primary sources. I needed an 'in' to the aboriginal community in order to conduct interviews as well as a different approach to ethical and cultural sensitivity (see 4.6 Research with Indigenous people).

People who were interviewed during the first season also made reference to the government and prompted me to focus in that direction. During the second phase I reflected on the knowledge and recommendations that had been shared with me. Respondents often suggested that I explore or search out people of whom I was unaware so the second and third phases of interviews were partly respondent driven.

Snowball sampling was useful for the 'introductory' phase to gain interviews but once theoretical saturation and fewer new additional insights were gained from interviews I turned to purposive sampling. I contacted interest groups and individuals based on specific preselected criteria and intentionally sought differing perspectives from interest groups. During this phase many interviews were viewed as filling a mosaic of perspectives (Table 4.6).

Table 4.6: Interview Schedule Summer 2011 (Phase 2) and Winter 2012 (Phase 3)

<p>Tuesday June 5</p> <p>10:00am Crossfield (grazing lease)</p> <p>Travel and set up camp</p>	<p>Wednesday June 6</p> <p>10:00am Outskirts of Sundre (FRH permit patrolman)</p> <p>2:00pm Sundre museum (WHOAS, trapper)</p>	<p>Thursday June 7</p> <p>10:00am Sundre and Bearberry Tornado!</p> <p>2:00pm Red Deer River Ranch (Large cattle business, grazing leases) 2nd Tornado!</p>
<p>August 5</p> <p>Blood Tribe elder and expert on horses. Meeting in Lethbridge. (Indigenous)</p>	<p>August 27</p> <p>Medicine Hat (government)</p>	
<p>Third Phase of Field Work February 20, 2012</p> <p>Stoney Nakoda Reservation (Indigenous)</p>		

We were caught in a tornado during the second field season and our trailer and car were damaged. The trailer had water inside and a tree fell beside it at which point I decided to terminate data collection. We drove back to Calgary that night and I cancelled two interviews due to the tornado activity. Also, potential meetings based on contacts made by local people on my behalf were missed. As a result the second field season was shorter than I had anticipated.

4.4.5 Third Phase of Fieldwork

During phase three purposive sampling dominated. This phase of fieldwork was led by previous research and was partly respondent-led in the sense that interview selection was based on data already collected and on direct suggestions made by respondents regarding research direction(s). Local perspectives include specialists that are knowledgeable and equipped with direct experience. Suggestions by respondents on areas of interest were explored.

Marginalized groups became more of a focus as were specific groups identified by respondents as possessing strong positions toward FRH. This phase of data collection became more ‘specialist focused’ and included perspectives from forestry, government, Alberta beef producers (local representative), and Métis people. I also made inquiries at Métis settlements (Métis people of Alberta) but did not find people who were aware of FRH in or close to Métis settlements. However, Métis people living off of settlements were involved in my research.

4.5 Ethics

I hold the importance of ethics and the treatment of respondents very highly. Ethical integrity in research is an area that I value. I have tried to represent all respondents as accurately and fairly as possible. As a result of my research I was introduced to many wonderful people who were warm, genuinely interested in FRH and kindly accept me into their homes and communities (see reflexive box 5).

4.6 Research with Indigenous Peoples

It was imperative for me to obtain perspectives from Indigenous, Métis and mixed populations that had direct experience with FRH. In addition to obtaining formal permission from the University of Calgary Conjoint Faculties Research Ethics Board (CFREB) further permission and consultation was sought in order to proceed respectfully and ethically.

I found contact information on a website containing research on wild horses and Indigenous knowledge holders. I then corresponded with a consultation manager from the Stoney Tribal Administration. I was informed that due to the political realities of the reserve it would be difficult to obtain a Band Council Resolution (BCR), which requires signatures from a quorum of council (minimum of 3 from each Bearspaw, Chiniki, and Wesley Nations). The consultant suggested that the scope of my research might not require a BCR and after further correspondence referred me to an elder who was involved in previous research on wild horses. I was informed that an ethics consent form and payment for the sharing of intellectual property would be necessary and so I provided both upon meeting with indigenous respondents.

Given that my focus was not solely on Indigenous communities and that developing long term trusting relationships require more time than a PhD project allows, I did not have time to develop the in-depth relationships within Indigenous communities that are suggested by Bull (2010). The lack of strong relationships within Indigenous reservations in the research area is one limitation of my research that deserves additional concentration. The difficulty of securing funding for sustained travel to Indigenous communities as well as the time required were two other limitations. Further detailed research focusing on Indigenous cultures in Alberta and FRH

is necessary if Indigenous perspectives are to be fairly represented in FRH policy. My thesis or a shorter report will be left in the communities and with individuals who participated.

I felt partially prepared for interviewing Indigenous people because of my previous teaching experiences with Indigenous populations. Upon graduating with my education degree I taught at an elementary school on the Siksika reservation. I also taught courses offered for Indigenous populations at the University of Lethbridge. I hoped that these experiences as well as my friendships with Indigenous people partly prepared me for approaching the interviews in a culturally sensitive manner. As is culturally appropriate I presented elders with tobacco and payment for sharing their intellectual property. The other respondent I interviewed is an elder affiliated with the University of Lethbridge who was recommended to me both because of my connection with the Native American Studies (NAS) department and because he is considered a holder of traditional knowledge and expert on horses. Two respondents that I interviewed lived on reservations; other Indigenous, Métis and mixed respondents did not belong to an organized government or group from which to seek permission. My aim, that I hope I met, was to observe the necessary culturally different principles, values, ethics, and rules of conduct (Bull, 2010).

4.7 Limitations

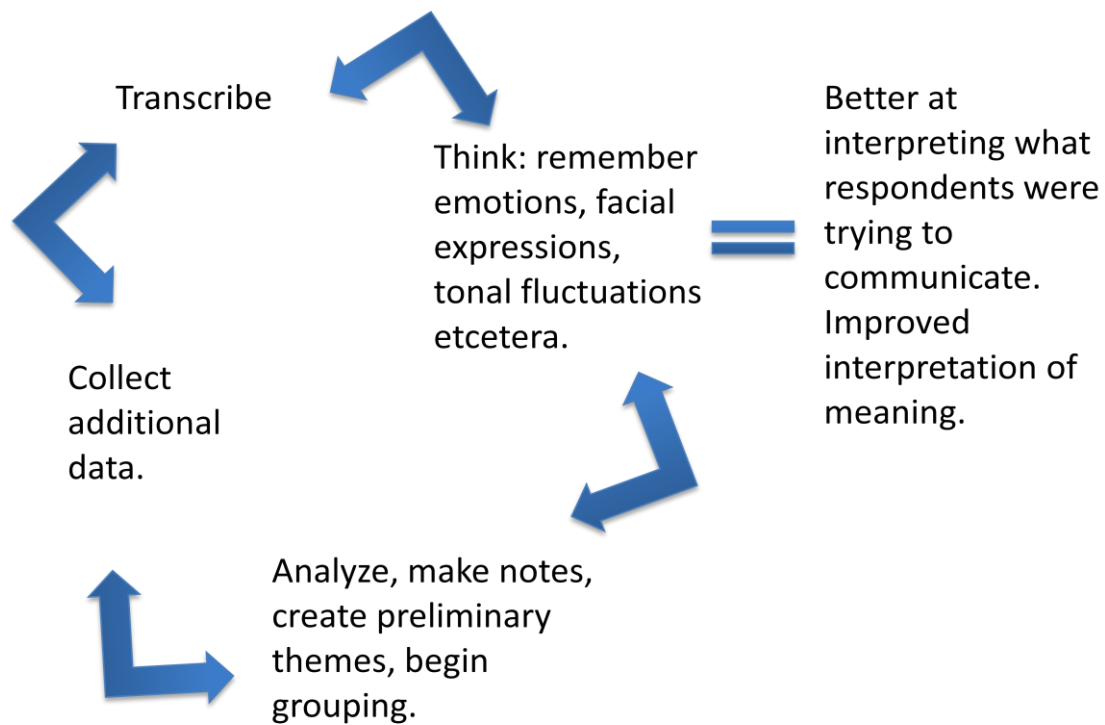
The limitations of funds led to a creative use of time and resources. Camping instead of residing in hotels or other commercial accommodations at times resulted in positive outcomes. Stories shared by locals and fellow campers might have not been shared in more formal and commercial settings. Several respondents offered that my family and I reside in their homes or cabins. The geographical scope of the area was large and difficult to access but including

perspectives from remote areas as well as from areas closer to urban centres led to what I believe is a necessary diversity. The creative suggestions and potential resolutions for problems with FRH in particular geographical or cultural settings as well as insights from numerous interest groups and individuals are helpful for informing future policy regarding FRH.

4.8 Transcribing Data

Transcribing many hours of audio interview data from the recordings was extremely detail oriented and time consuming. The quality of the recordings varied. Depending on the venue where recordings took place, some were clear and easy to understand whereas others were very difficult to decipher. Transcribing was the least enjoyable part of my research and it took many months to decode and transcribe all of the interviews that I had recorded. I would have gladly hired someone to transcribe the recorded interviews but upon the advice of my supervisor I transcribed all of the interviews myself. My supervisor's advice was sound. Since all interviews were conducted by myself the familiarity and recall of the interactions experienced during the interview were valuable (Figure 4.2). Transcribing led to a magnified recollection of the actual interview and the social exchange that took place. Carefully listening to each interview, the expressions, each word, sentence and section became an analysis in itself and helped to decipher meanings that may have been misinterpreted if they were simply on paper. Upon reflection, the transcription process became an integral part of analysis. In the end I believe my research to be more accurate, thorough and rigorous as a result of transcribing.

Figure 4.2: Benefits of Transcribing Data



4.9 Data Organization

4.9.1 Coding

Descriptive codes answer who, what, when, where, how type questions (Cope, 2010, p. 283). Examples of descriptive codes from my interviews include: where do problems with the

horses occur, what do the horses do on your land, where are the horses, where did FRH come from, how did FRH get here, when did FRH get here, what management methods should we use, who should make decisions on FRH etc.

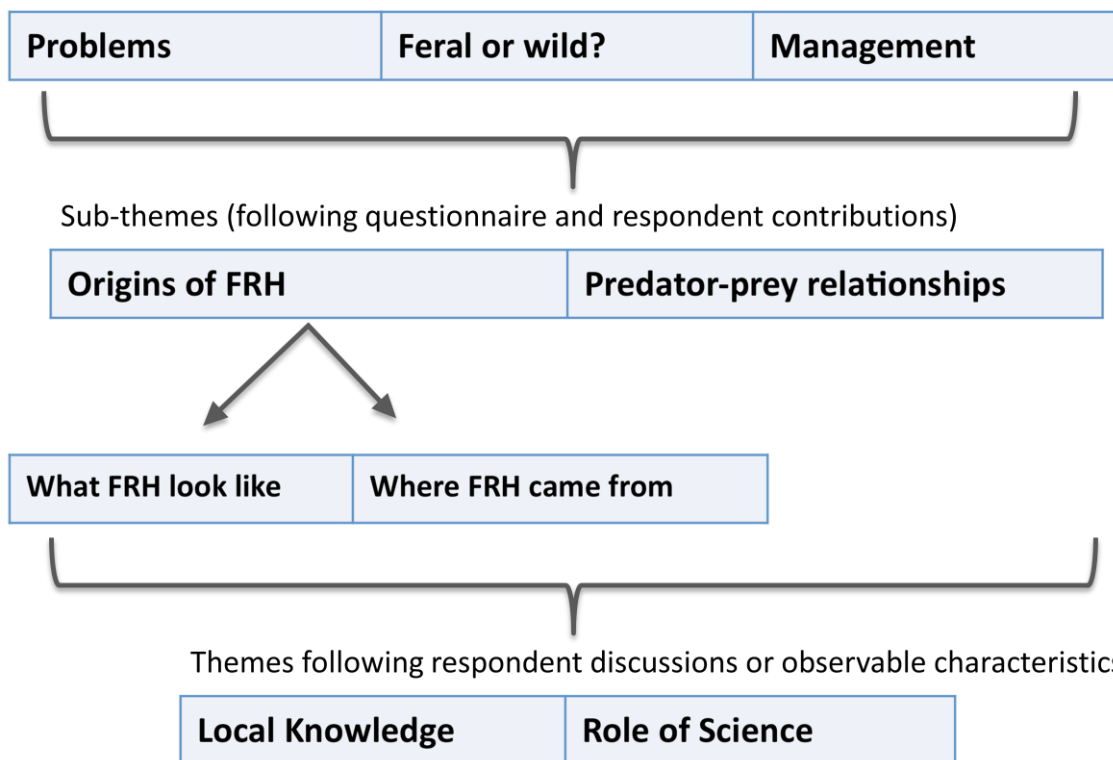
Analytic codes are themes that the researcher is interested in (Cope, 2010, p. 283). One analytic code was that of the role of science and local knowledge. Cope (2010) states that the strength of coding is that it is open to new and unexpected connections. These new and unexpected connections easily lent themselves to the use of social mapping and situational analysis as an organizational tool that was used simultaneously with coding.

Unfortunately or fortunately conversations do not proceed in an organized and grouped manner where topics are dealt with one at a time in an orderly manner that leaves them easy to compare and analyze. When grouping and beginning to categorize and code transcriptions, conversations were not linear so I primarily grouped all similar topics together and then divided those larger groups into smaller comparable theme oriented topics. I used numbers for some sections and colours to code other sections. The process was messy and at times frustrating. Many coloured markers and a very large table helped. I made piles of similar topics and then organized each pile of similarly themed perspectives into a written section. I also used the 'find' and 'go to' features in word to locate specific words or expressions. For example, one topic area was that of predator-prey relationships. Upon compiling stories of predators I went back and searched all transcribed interviews again for words such as bear, cougar, coyote, wolf and predator to ensure that all stories/perspectives were included. My initial plan was simple and consisted of documenting potential problems or advantages that local people may experience, perceptions of horses as feral or wild, and management suggestions and preferences (Figure 4.3).

New topics of discussion led by the respondents emerged. I organized the data based around the questions in the semi-structured interviews, although some interviews followed the interview guide closer than others. Indigenous people often shared information in the form of stories or knowledge that was passed down to them. Their stories were valuable but did not fit into the categories in the interview guide. The different perspectives shared led me to write the chapter/section on local knowledge.

Figure 4.3: Thematic Organization of Discourse-Transcribed Interviews

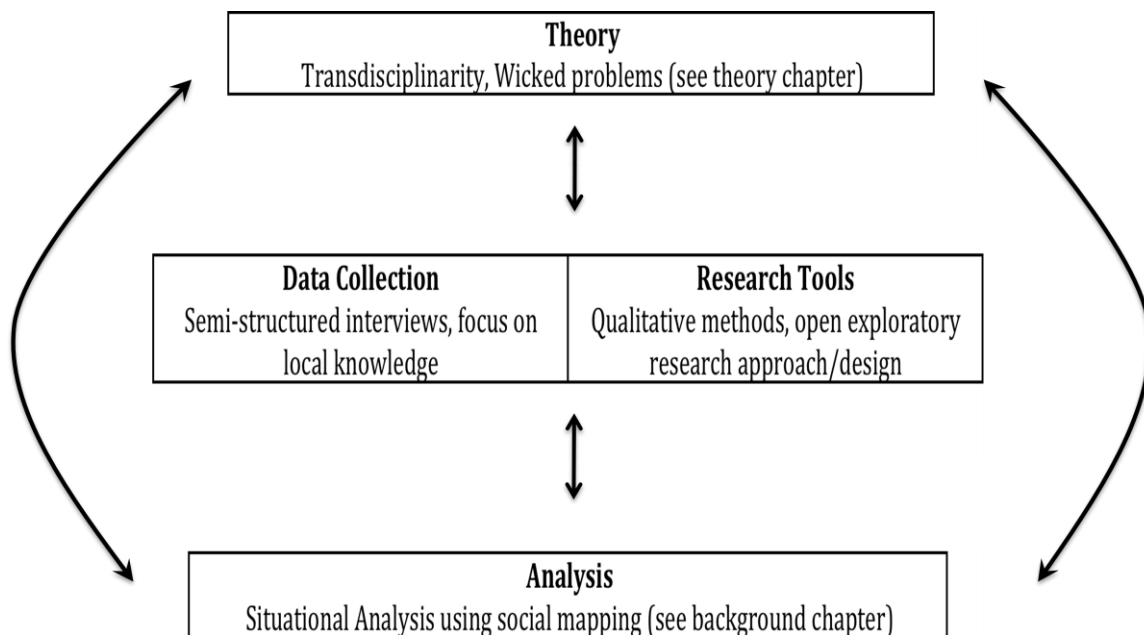
Themes following questionnaire



Social mapping was a large part of the analysis and of organizing the respondents into worlds and arenas. Social mapping, also referred to as situational analysis, helped in all areas of

research. Social mapping helped to organize relevant forefront information and to situate it at the centre of research. Social mapping was used to analyze and map connections between respondents, their positions and to show relationality. Showing how arenas and worlds are interconnected, visually, results in transparency of how I view and categorize respondents. I call Figure 4.4 a methodological loop because all parts of research are interconnected and dependent upon one another. Theory, data collection, research tools and analysis are all interrelated and were dependent on feedback from one another in order for the research to progress and evolve. For example social mapping is as much a theory as it is a tool used in analysis. Similarly an open research design is theoretically based while at the same time complementing situational analysis.

Figure 4.4: Methodological Loop



In the results chapters I present the positions and discourse of worlds and their respective respondents. In parentheses I identify the interviewee by the use of “I” which stands for interview and a number assigned to maintain the anonymity of each respondent. I also use numbers in parentheses to show when more than one respondent shared a similar position. I begin discussing results in Chapter 5 with a general overview of what constitutes knowledge, experts and wisdom and suggested classifications of FHR before delving into specific results on problems and benefits in Chapter 6, and suggested management of FRH in Chapter 7.

CHAPTER 5: RESULTS AND DISCUSSION-LOCAL KNOWLEDGE, HORSE ORIGINS AND CLASSIFICATIONS

The next three chapters present fieldwork results describing respondent and meso-level (group) discourses. I have divided the results into three topic areas: 1. discussion of the application of local knowledge to this research, respondent positions on horse origins and the way respondents classify FRH; 2. local positions on benefits and problems of FRH; 3. local positions on various FRH management techniques and approaches. In the next three chapters I specifically address the research questions on historic and contemporary local human interactions with FRH (Chapter 5), local classifications of FRH (section 5.3.4), local positions on problems related to FRH (Chapter 6), and acceptable management of FRH (Chapter 7).

Chapter 5 describes local knowledge and its interconnectivity to experts, wisdom and to decision-making. This chapter establishes why the ‘local’ matters. Examples of different perspectives on horse origins discussing where FRH came from and how long ago are provided later in the chapter to start answering the research question on meso-level discourses and how FRH are classified.

5.1 (Local) Knowledge, Experts, Wisdom and Decision Making Regarding FRH

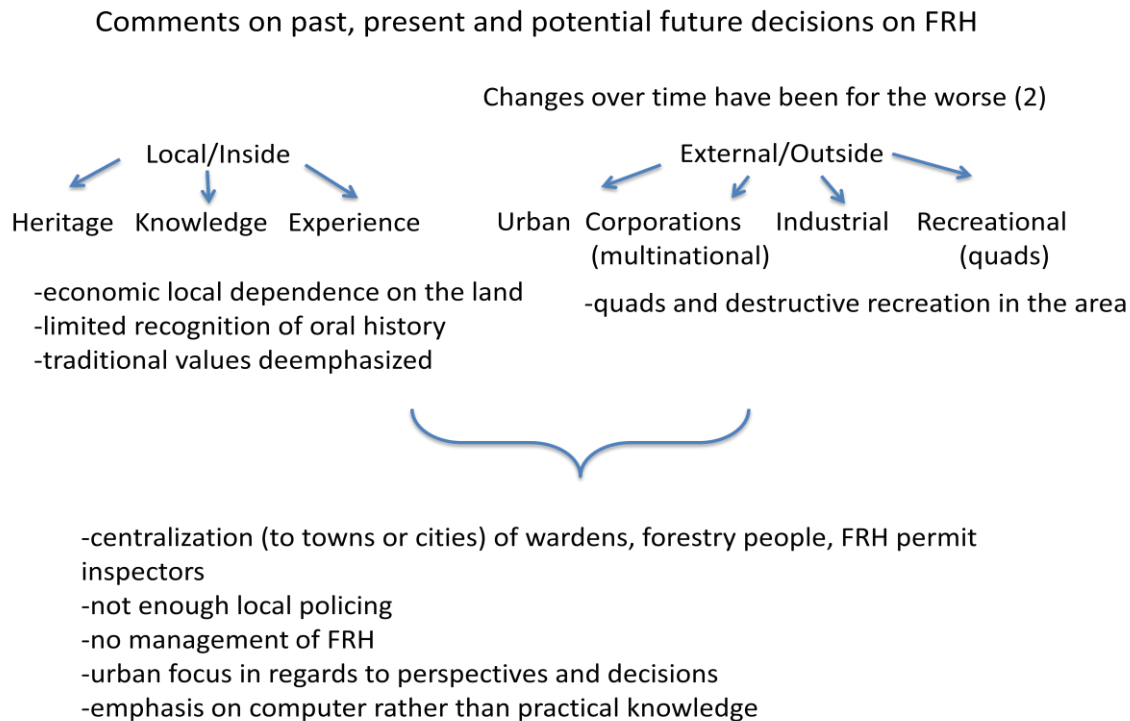
This section examines knowledge held by experts while weaving respondent positions into the discussion of FRH. More specifically, I reveal the ongoing partiality toward conventionally held expert knowledge and juxtapose such knowledge against those respondents who are knowledgeable because of practical experience, as well as oral and cultural history. I describe the general comments respondents made about local positions concerning free roaming

horses as well as the external aspects regarding the FRH policy process. Subsequently I expand upon these comments in greater detail to make additional connections between knowledge, expert and local perspectives.

Respondents representing the Willmore Wilderness Foundation, select cattle ranchers, wardens, and Indigenous contributors objected to decisions made primarily from an urban perspective, which they felt often disregarded rural or local perspectives and ways of life. Respondents who commented reiterated that local people have to live with decisions and policies made by outsiders who are not locally engaged (Figure 5.1). For example, patrol or enforcement roles (wardens, permit patrol, forestry personnel) that were historically community based or consisted of people living in the backcountry were reportedly reduced and centralized into cities and towns. Local engagement and power has been stripped away by reorganizing enforcement roles and policy intermediaries away from local communities. As a result, local values as well as local economic dependencies on the land are often disregarded or misunderstood by policy makers. Many local people consider those who are involved with the land and with FRH as knowledgeable and experienced whereas decision makers (or those influencing decision makers) are viewed as often overlooking experience and the oral history of the area. FRH were reported as part of a way of life for the mountain people, for example, and as part of a local heritage. External or outside forces were often identified as urban, industrial or recreational. One respondent involved with cattle grazing spoke of multinational corporations as dominating, wanting to control and make decisions on behalf of the local population as well as pushing corporate values that could compromise local rights and ways of life. Section 8.4 addresses the

concerns presented above. Suggestions for engaging local experts and knowledge are given and the merits of including marginalized groups in the policy process are presented.

Figure 5.1: Local Aspects and Comments on Decision Making Regarding FRH



5.1.1 Knowledge and Experts

The Oxford Dictionary (Soanes & Hawker, 2005) defines knowledge as “information and skills gained through experience or education” (p. 562) and an expert as “a person who has great knowledge or skill in a particular area” (p. 349). Along the same lines, but from an academic point of view, Ackoff (1989) argues that knowledge is obtained in two ways: 1) transmission from another who has it and 2) extracting it from experience (p. 4). The definition of knowledge can incorporate both those who are knowledgeable because of practical experience and those

who were taught in more formal detached ‘scientific’ and institutionalized settings. The practical and institutional categories are not dichotomous because knowledge can be gained through various combinations of practical and formal education.

Drawing on the above definitions of knowledge, I have relied on two overlapping spheres of experts in my research: 1) local experts with knowledge gained through direct experience, and 2) scientific experts with knowledge acquired through formal education. Many of the local people whom I interviewed demonstrated an intimate and explicitly intertwined relationship with the land. Griffith (2006) states “ecological knowledge is seated in personal experience and, by extension local history” (p. 164). This practical view of knowledge follows the thinking behind local knowledge (LK) and is directly related to my research approach including various sources of local, practical and often historical knowledge.

Participants with scientific expertise gained knowledge mainly through education and through applying the scientific method. Scientific experts hold knowledge that is gained through research, through interacting with other scientists, reading established peer reviewed material as well as through conducting systematic observations, fieldwork and experiments. Research conducted by scientific experts may be rigorous, systematic and thorough; however, it is important to recognize that in many cases scientific research does not include ongoing, year round, daily interaction with and observation of FRH and the environment. The scientific view of knowledge tends to align with western science and the approaches and philosophy that flow from it. While respondents possessed varying degrees of practical experience and formal scientific training, most had local, enduring, practical, outdoor experience.

Traditional ecological knowledge (TEK) refers to local knowledge held by indigenous people, that is unique to a culture over generations (Berkes, 2008). TEK may apply to knowledge held by Indigenous populations in the research area. FRH first (re)occupied the land at the latest in the early 1900s and although this may not constitute many human generations of knowledge of FRH, a system of adapting to and using an established knowledge base which is capable of assessing multiple variables, may apply (Berkes & Turner, 2006). Local knowledge (LK) differs from TEK in that local knowledge is recent, and nontraditional. Local experts are those who hold historical and geographical experience gained through on the ground observations and oral histories (social exchanges of information). Local knowledge is applicable to those working with or living in close proximity to FRH such as those with grazing leases.

A meshing of TEK and LK may exist within the Métis and settler communities. Potentially, LK may be viewed as a philosophical derivative of and share components with, TEK. Some communities and knowledge systems in the research area have become so intertwined among the Métis, Indigenous and settler people that it would be difficult to definitively declare one type of knowledge as traditional or local. Rather, I suggest that knowledge (in the communities in which I conducted my research) evolved in concert with the people who brought their ways of knowing together in combination with TEK, LK, or knowledge learned formally in institutions. Knowledge has roots and depth but is also fluid and ever changing.

Lifelong (or many years of) experience with FRH consists of living in close proximity to the horses, having on going interaction with the horses, observing horse behaviours and their impacts on the land and exchanging folklore and stories about FRH; all of these sources of

information constitute relevant contributions to knowledge. Experiences with FRH in relation to wildlife, the environment (in terms of the health of the land), and human activities and industry appears to have led to a form of local or traditional knowledge that allows for understanding and evaluating complex systems which interact in tandem.

Local people who spend time interacting with FRH arguably have the most practical experience with the horses (Table 5.1). Locals with a multigenerational history in the area, especially those who retained some long-established ways of life, are well versed in local history and in detailed information regarding the horses. For instance, one respondent identified the groups of knowledgeable people in the Grand Cache area as settler descendents, Indigenous and Métis people, as they historically used and continue to use horse pack trails established by original inhabitants, hunters, trappers, outfitters and natural resource prospectors who explored the difficult mountainous landscape. Table 5.1 provides my attempt at defining temporal connections between FRH and respondents. The development of the table was guided by conversations and discourses provided by respondents. The shaded boxes represent the general temporal interactions respondents have had with horses. One group that I discovered during the research process (that I had not recognized previously) was the multi-generational Mountain Métis.

Table 5.1: Temporal Description of Respondents Involved with FRH

Actors	Multi-generational Interactions with FRH	Life-time, long term interactions with FRH	Contemporary interactions with FRH	Little contact with FRH but influential research
Park Wardens				
WHOAS				
Indigenous				
Métis				
Government (AESRD)				
Outfitters				
Priddis/acreage				
Researchers (university and government)				
Permit inspector				
Cattle ranchers and lease holders				
Large business				
Forestry				

5.1.2 Métis Connections to FRH in Alberta

Reflexive Excerpt 7

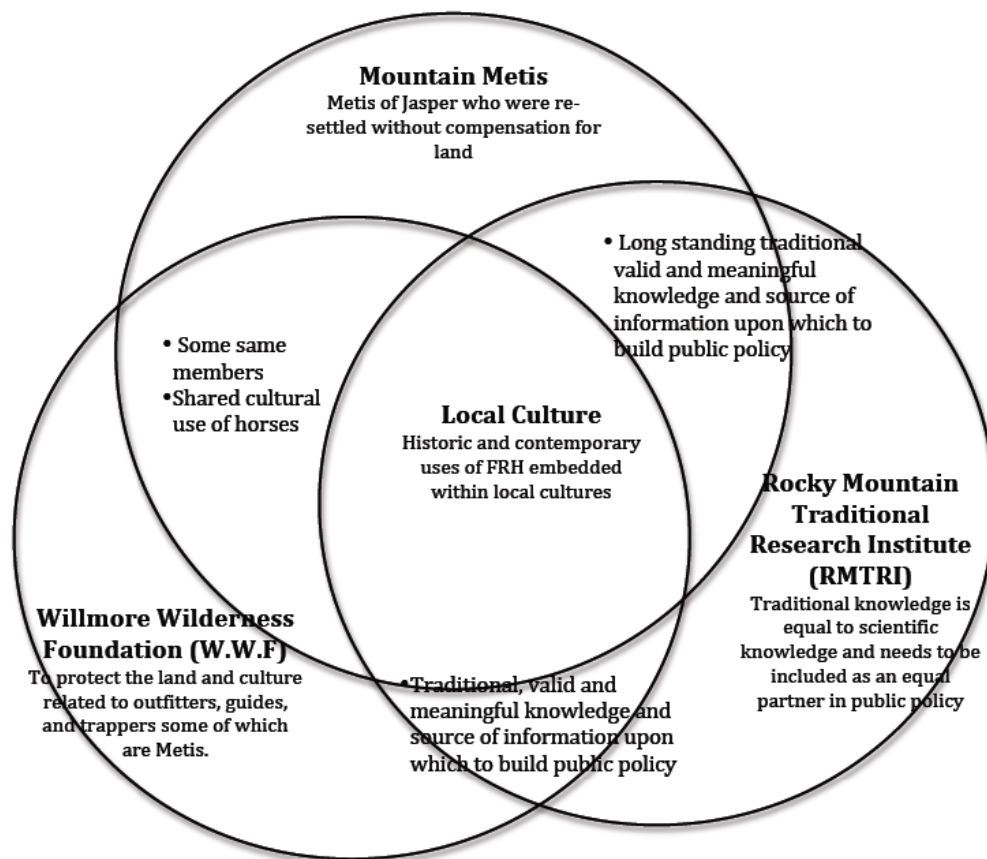
One respondent spurred me to further research Métis culture in Alberta. I learned about a group of Métis people who were displaced from Jasper when it became a national park with no monetary compensation for the land that they occupied and used for nearly a century. These people are identified as the Mountain Métis, are often part of WWF and continue to use FRH as part of their culture. Some people who identified themselves as Métis to me during our conversations were not necessarily granted Métis status by the government. Respondents shared with me that those who self identify as Métis are not always legally identified by the government as part of the Métis people of Alberta. In my writing I use the term Métis, not based on the government criteria outlined below, but based on respondent usage of the term to identify themselves or those they spoke/speak of.

This section answers, in part, the research question on local cultural interactions with FRH. Métis people of Alberta identify themselves as Métis in various ways. The official Métis Nation of Alberta (MNA) website identifies Métis as “distinct people, who have mixed ancestry but also developed their own customs, way of life, group identity that is separate from Indian, Inuit and European.” The definition of Métis according to the MNA is “a person who identifies as Métis, is distinct from other Indigenous peoples, is of historic Métis Nation ancestry, and is accepted by Métis Nation” (Metis Nation of Alberta MNA, 2006).

In 1910 Métis families were evicted from Jasper when it became a national park. Some had been in the Athabasca valley for close to a century and then resettled in and around the Grand Cache area. The Mountain Métis maintain that they were not treated fairly with respect to their homeland and were not compensated for their land by the federal government. The Mountain Métis people continued to practice their culture in the Willmore Wilderness (Rocky Mountain Traditional Research Institute (RMTRI), n.d.). The Willmore Wilderness Park is unique in the way it protects the culture of the people who continue to use it as well as some environmental aspects of the park itself. The culture of the Mountain Métis and of those using the Willmore Wilderness in traditional ways is partial to the use of FRH horses. The Mountain Métis have historic ties to FRH. The Mountain Métis, as well as various local people described by WWF and RMTRI, all share a vision of the area that includes continuing to use the land in traditional ways and promoting local cultural traditional activities (Figure 5.2). The three organizations are not aligned with contemporary (and often urban based) environmental protection values which they feel are misguided, in that the land should not need to be protected from people who have been using it sustainably for generations. Activities that are culturally

relevant to the Mountain Métis and WWF include pack horse outfits, traditional trail restoration, and the training and use of wild horses. Traditionally and in contemporary times, horse capture and release practices are part of the culture of outfitting, trapping and guiding.

Figure 5.2: Local Research and Cultures Involved with FRH in Alberta



It is not my intention to undermine the experiences of locals who may not possess multigenerational experience but who nevertheless live in close proximity and share land with the horses. I borrow Berkes' (2008) description of those who spend time on the land as

possessing the “ability to observe the environment in detail, and in some cases monitor day-to-day changes...Many farmers, naturalists, sport hunters and fishers who spend time on the land also have this ability” (p. 185). People who have a history of living and working directly on the land have valuable and practical experiences with FRH in a contemporary milieu and have much to offer by helping to map the socio-historic geography of the area. This type of knowledge can be used by decision makers to better understand relationships between humans and FRH.

Many of those whom I interviewed can be described as experts because of the knowledge they possess. Zeleny (1987) defines expertise as “multilayered” which, at the highest level, should include an understanding of value systems (p. 64). Zeleny (1987) arrived at this understanding of expertise by including value systems and values and that is also a large part of TEK and potentially LK. People who have a history of living and working directly on the land may be more likely to emphasize wisdom (which includes a higher level understanding of values) and experiential knowledge as a means to sustain the land and wildlife. One reason may be the economic dependency of those who directly rely on the land and wildlife for survival. In moving beyond narrow definitions of knowledge and experts, FRH should include necessary components from TEK, LK and wisdom that incorporate values, wisdom, ethics or beliefs (Berkes, 2008, p. 253).

Local, indigenous, settler and Métis worldviews or value systems differ from outside views coming from urban or scientific value systems. One respondent from the Willmore Wilderness area commented on the importance of traditional values and knowledge:

traditional values are good knowledge and need to be recognized. People from the city are not listening to the local people with practical knowledge...urban thinkers and outsiders are over riding policies and common knowledge of the people who live in the area...policy is very urban focused (I4)

The role of FRH as part of the ecosystem was also highlighted, as the following comment illustrates: “according to oral history FRH played a significant role in the ecosystem...city people don’t see the solutions because local people have the skills and experience” (I4). One respondent’s example of misguided ‘urban’ focused policy spoke about free roaming horses controlling willow growth, “...since the horses have been removed there are willows that grow higher than the person riding the horse...The land is useless. The government pulled horses off the land without thinking that would affect other wildlife habitat” (I4).

While speaking with local people from various communities within the research area I was told repeatedly that the biologists and managers are located in large centres and are not in any way connected to the community or to the problems that local people face. One long time resident and permit inspector suggested that the shift toward centralization started in the 1970s “...there’s nobody living in the bush anymore” (I2). An experienced retired park warden and outfitter who spent much of his life on the land (from the 1940s to the present) referred to contemporary resource managers as “computer biologists” with little or no on-the-ground practical experience (I3). Similarly, an Indigenous elder spoke out against contemporary ways of accepting knowledge “despite what the biologists teach us, horses and wildlife belong together. They are meant to coexist but we over-burden some of these areas...grazing areas, leasing lands- the only concern is on agricultural capacities. We should be concerned about wildlife as well” (I12).

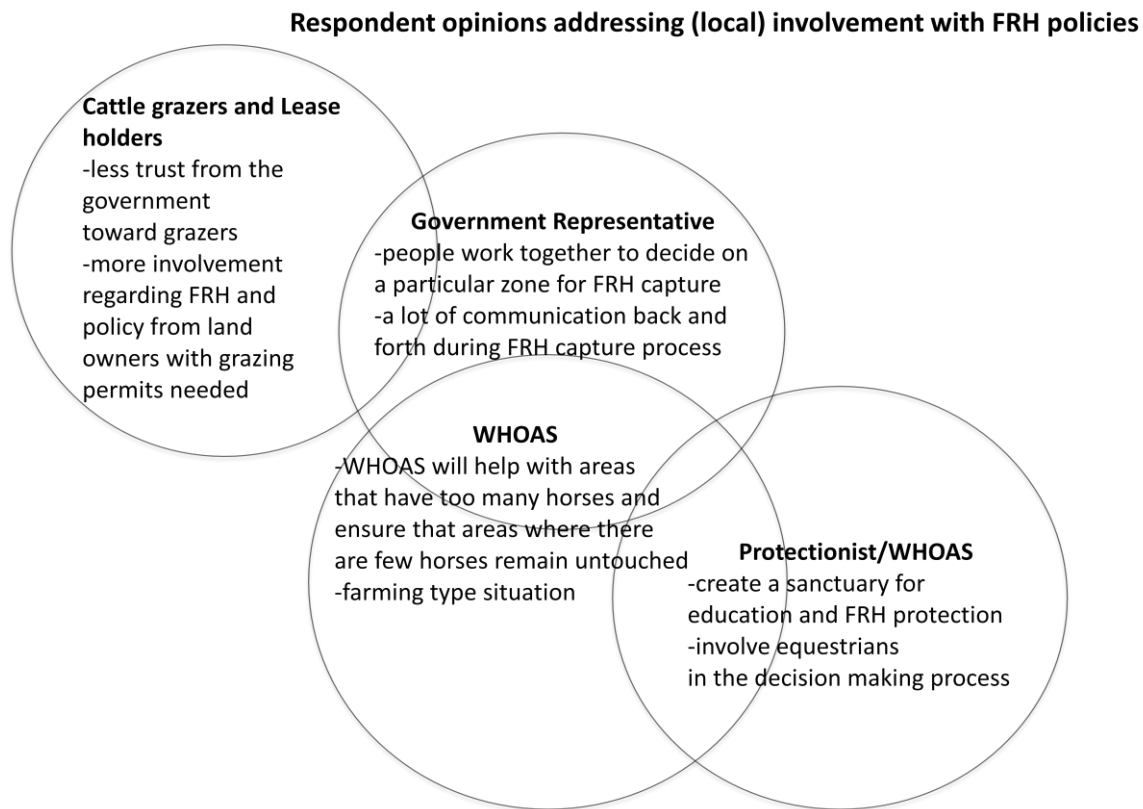
Another perspective on dismissing local perspectives came from a local delegate from the Alberta beef producers who spoke about local perspectives on wildlife numbers in the area. “The government numbers are not the same as what we see out there” (I7). Local perspectives, such as

those expressed within the Willmore Wilderness grizzly bear survey report (Leonard, 2013) often considered predatory animals such as grizzly bears, wolves, cougars and coyotes greater in number than government officials and government based researchers had shown. Part of the explanation given by local people was that in certain areas they see predatory animals in greater numbers and more often than they did in the past (Wilmot & Clark, 2005, p. 154; Kellert, 1985). Policy makers might argue that the presence of greater numbers of predators might be explained by a shrinking habitat, food consisting of prey and garbage attracting predators to human settlements, and multiple sightings of the same predatory animals resulting in multiple counts (Heikkinen, Moilanen, Nuttall & Sarkki, 2011).

Local elders (with Métis and/or settler ancestry) expressed concern with policy regarding FRH as well as with broader wildlife and land management issues, and described policies as impractical and as lacking consideration for the people who live there. Decisions and management were described as coming from the top down with an urban perspective that often failed to recognize the local way of life and the challenges and needs of local people. One elder with a long history of outfitting and working in the backcountry spoke about the past where he was employed to oversee FRH and those capturing FRH with capture permits. One of his roles was to ensure that the horses were treated humanely and that the correct capture procedures were being followed. His job was eliminated. He expressed worry over the elimination of on-the-ground local positions and the lack of direct oversight of the capture of FRH. He also was concerned over the shift away from, and general lack of, involved local hands-on management of the land (I2). Several (3) long-term residents in the area expressed similar disapproval for the discontinuation or lack of local involvement with the policies affecting FRH. The respondents

stated that government had eliminated local positions, which at times acted as the only link between local perspectives and the provincial government (see section 7.9.7 for further discussion). Various respondents spanning the large geographic research area from Grand Cache to Sundre echoed similar sentiments. The government spokesperson (I16) held a different perspective when responding directly to my question about FRH capture regulations; he viewed FRH capture as an open and mutually communicative process (Figure 5.3).

Figure 5.3: Positions of Worlds on Local Involvement with FRH Policy



In writing about Willmore Wilderness north of Grand Cache, Feddema-Leonard (2007) described the local history of the indigenous people, trappers, and outfitters and captured the

problem of a detached and at times elitist approach to research. In the following excerpt, she echoes the disregard for local knowledge and expertise that I found through my interviews:

Sadly, the expertise of the mountain people was often ignored by many in the professional community who came to study this unique wilderness area. These educated men and women often patronized the locals with their scientific rhetoric, while failing to include this [the people] valuable resource in their scientific studies” (xix)

Concerns over the asymmetrical positioning of researchers and respondents, and the recognition of practical experience and expertise in a more equitable manner, have also been expressed elsewhere in relation to Indigenous people (Louis, 2007; Nadasdy, 1999; Nadasdy, 2006). I echo Nadasdy (1999) in that what is needed is a way of recognizing and acknowledging local values, beliefs, practices and experiences from people who are knowledge holders and thereby experts on the area.

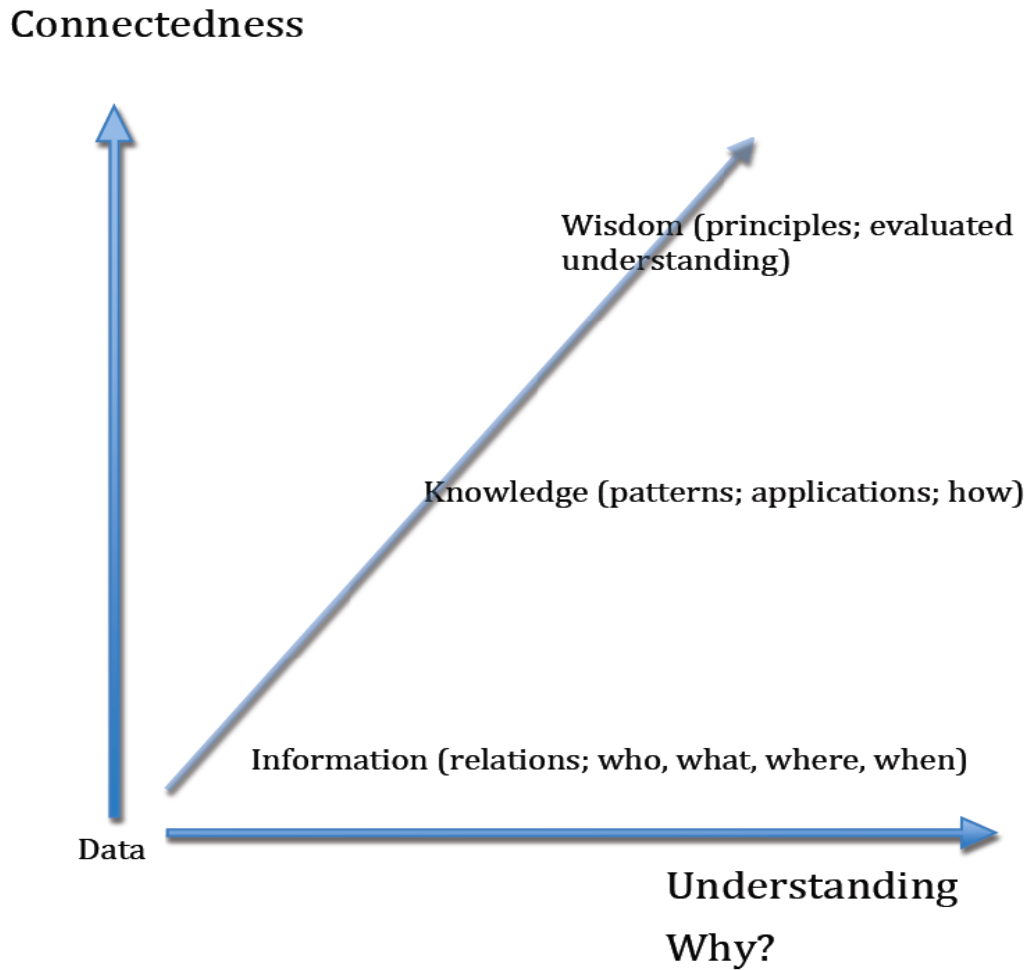
5.1.3 What is Wisdom and How is it Related to Knowledge?

Unlike understanding knowledge, by attempting to measure and quantify it, to be objective and detached from feelings, values and often personal experiences, LK (local knowledge) and TEK are gained through practical experience, through day to day interactions, from knowledge passed down by family members and through community-based social interactions and history of descriptive stories. Given this comparison, it is important to acknowledge that the dichotomies between western knowledge and indigenous knowledge often artificially separate and unfairly position knowledge systems against one another (Beckford, Jacobs, Williams & Nahdee, 2010). Different ‘knowledges’ can share similar properties while at times diverging or contradicting one another but, of greater relevance to my work is that they can evolve together and be interconnected. Local Western scientific understandings of FRH are often

interwoven with local and cultural knowledge where Indigenous, Métis and local multigenerational settlers are involved.

The incremental relationships among data, information, knowledge and wisdom (DIKW) have been illustrated in a hierarchical model shown in Figure 5.4. The DIKW model fails to acknowledge human aspects such as feelings and values until the very last stage termed “wisdom”. Local knowledge and TEK prescribe to a more holistic description of knowledge. Knowledge acquisition is part of a complex learning process that includes ethical inclinations, feelings, values and inner and outer predispositions to “understanding” events and interactions in a certain way. Rather than the rigid hierarchical and linear steps used to describe the path toward wisdom in the DIKW model, I see knowledge acquisition as messy, inclusive of the affective, and occurring in a fluid and interchanging order. In addition, I equate wisdom with the capability of using higher order thinking skills. Higher order and lower order thinking skills are separable (Lewis & Smith, 1993; Barak, Ben-Chaim & Zoller, 2007). Higher order thinking skills have numerous interpretations within the education field; definitions of higher order thinking skills include reasoning, problem solving, interconnecting, filling gaps, elaborating, making inferences, interpreting, building representations, analyzing and constructing relationships, manipulating information (Lewis & Smith, 1993). Higher order thinking skills use and build upon lower order thinking skills. Lower order thinking skills involve routine application of information that was memorized, listing or inserting information into previously learned material and using route memory.

Figure 5.4: Data, Information, Knowledge, and Wisdom Model



Bellinger, Castro & Mills (2004, Wisdom, para. 2)

The aspect of the DIKW model that I find useful for understanding FRH is the way in which connectivity and understanding are depicted. The model shows that the progression

toward wisdom requires greater understanding and greater connectedness. Interestingly TEK also emphasizes connectedness as a key component to understanding. The more we understand the history and politics related to the horses, and the relationships among people regarding the horses, coupled with FRH ecology and FRH impact on the land, the greater our understanding and wisdom about them can become. This transdisciplinary wisdom can then be translated into the creation of successful management options. The better we understand the interrelationships among people, the environment and FRH, the greater will be our understanding of the problem(s) and the greater will be our potential to implement methods that may promote co-existence between worlds and arenas on issues concerning FRH.

Based on the DIKW (Figure 5.4) and on the TEK understanding of wisdom, I define wisdom as possessing connectivity and greater understanding of wicked problems, as consisting of accumulated learning and broad practical knowledge, as striving for ethical judgments, as including widely held opinions formed over generations, as leading to better decisions, as potentially having no definitive answers and insights gained over time to pass on to posterity (highest level of connected understanding).

Wisdom shares some defining characteristics with wicked problems. For example, Bellinger, Castro & Mills (2004) defined wisdom as asking questions to which there are potentially no answers. Note the similarity to wicked problems, which may also lack a definitive solution (see section 2.1.1). So when searching for ways to deal with wicked problems, wise ‘solutions’ could include aspects of wisdom such as connectivity, greater understanding in the form of focusing on why-type questions and considering the ethical implications of actions taken in the form of policy. The problem then, would be understood more comprehensively (including

practical and ethical dimensions) and potentially result in less local resistance to locally sourced solutions. In turn, my hope is that a wise approach would result in a democratic and locally informed policy process.

To ignore knowledge of people who have frequent contemporary or intergenerational interactions with FRH seems to lack the defining characteristics of wisdom (as outlined above). This appears to be true not only because any FRH management plan will have to be put into practice by those who actually interact with FRH (and who have geographical proximity to them) but because they hold a wealth of knowledge and practical experience with the horses. The knowledge held by local people may be practical as well as historically significant for understanding existing local positions on FRH. Understanding local positions may lead to less resistance to management and potentially encourage positive involvement from local communities in FRH policy creation.

Wisdom is the thread that runs through the main concepts in this discussion. The wicked problem of FRH requires wisdom to formulate better solutions. TEK, and potentially LK incorporate wisdom into their philosophy of knowledge (way of life). More conventional definitions of wisdom also see it as inclusive of the affective.

I have suggested elsewhere that qualitative approaches are adept at dealing with higher order ‘why’ type questions and may be best at dealing with human FRH interactions. The disagreement between different approaches to knowledge rests in how to arrive at wisdom and the process and interactions involved to get there. The general definition of wisdom, however, seems to be similarly understood across approaches to knowledge. Given this commonality, the

potential for shared aims among what appear to be conventional models of knowledge and alternative understandings of knowledge may be possible.

I conclude this section by arriving at wisdom as the potential commonality that may underlie future conversations concerning knowledge and experts. Current ‘scientific’ assumptions surrounding knowledge and experts need to be expanded and reworked in order to improve the understanding of complex human-animal issues such as those between humans and FRH. If the necessity of wisdom in management of FRH is agreed upon, the use of pluralistic knowledges (traditional as well as conventional) to inform the issue could lead to a better understanding of the people who are involved with, and make decisions regarding policies for, FRH. Understanding peoples’ positions regarding FRH helps to fill knowledge gaps and adds more dimensionality to decision making. The following section presents an example of several pluralistic knowledges of horse origins in North America as well as local perspectives on local horse origins. I provide an overview of several theories of FRH origins and their socio-cultural and historical relevance to the geographic area and people. How people (including decision makers) understand where FRH originated results in how the species is classified (wild, feral, stray, introduced etc.). Horse classifications then translate into how FRH are managed. Wild animals, for example, are managed differently than animals that are considered stray.

5.2 Horse Domestication, Theories on Horse Origins in North America

The domestication of horses is important to this discussion because, as Cronon (1995) argues, wildness is, (inaccurately, and often with negative consequences), perceived as detached from humans. The debate between FRH being feral, wild or other is based on different human

positions of what makes an animal wild. In the same vein Notzke (2013) states that FRH transgress wild and domestic worlds (p. 393). She continues to say that different meanings for horses exist because of conflicting discourses based on “competing philosophies of nature” (2013, p. 393). Based on the literature mentioned above when FRH are viewed as once domesticated and re-wilded it often takes away from their wildness because of their association with people.

5.2.1 A Brief History of Horse Domestication

Debate exists on the precise time of horse domestication. The domestication of horses was likely a separate event from using horses for riding. Kelekna (2009, June) suggests that:

...the earliest unambiguous representations of a rider mounted on a horse are in fact evidenced in Afghanistan 2100–1800 BC (p. 7).

Horse domestication probably first occurred in the fourth millennium BC on the Eurasian steppes, a great expanse of grasslands stretching eastward from Hungary for more than 6,400 km to the borders of China. Tribes of that vast peripheral area were notoriously responsible for the depredations and invasions that over the millennia threatened the heartlands of civilization to the west, south, and east (Kelekna, 2009, p. 1).

In the Iberian Peninsula the Moors (Arab and Berber descent) had horses from wild stock as well as from invaders from East Germanic tribes (Vandal, Goth) (Simpson, 1951). These mixes of horses gave rise to the Iberian breeds that the Spanish introduced to South and North America. In the 17th century two categories of horses occupied North America: 1) descendants from the Iberian horse (Andalusian, Barbary, Norse Dun, Sorraia, Arabian, Spanish-Barb) which are recognized as some of the oldest breeds of horses in the world, and 2) breeds imported by northeastern settlers and farmers which had French, English, Irish, German and Dutch bloodlines (Bearcroft, 1966; Hubert & Klein, 2007; Ryden, 1999).

5.2.2 Colonization and European Horse Re-Introduction to North America

There is general agreement that pressures of colonization in the 18th century forced free roaming horses toward the Rocky Mountains where the horses of the Spanish and the northeastern settlers and farmers interbred (Hubert & Klein, 2007). While limited DNA testing has been conducted, it is possible that free roaming horses are a varied combination of the two categories in addition to strains from more recently released or escaped horses from surrounding farms, ranches, outfitters and Indigenous lands (Hubert & Klein, 2007). Percheron draft horses and other horses used for heavy labour, that came from the northeast settlers, also were used in Alberta before machinery use became wide spread (Bearcroft, 1966). Presumably some of these horses escaped or were released once they were no longer needed and interbred with existing free roaming horse populations.

Horses played a central role in all aspects of European colonization and settlement, ranging from food production to material and food distribution, communication, road, railroad and building construction, mining, logging, and warfare. FRH with Spanish descent were often referred to colloquially as mustangs, a term which derives from the Spanish words *mesta* meaning cattle raisers or collectives and *mestengs* meaning without owner (Bearcroft, 1966; Roe, 1955). Horses, both domestic and wild, and their historical importance, continue to be celebrated in local communities through monuments, statues, museums, place names (15+ in Alberta; Thompson, 1997-2011), historic sites, rodeos and through other events reminiscent of the past. Not only were horses essential to European settlers, but also, to Indigenous peoples of the plains for both spiritual and practical reasons.

5.2.3 Primarily Western Theory on Indigenous People and FRH

In 1784, and probably much sooner, horses had been fully re-introduced to the plains (Roe, 1955). The horse trade resulted in some Indigenous bands acquiring horses prior to coming in contact with European settlers. Horses were acquired through trade, from traders and explorers who left their horses with Indigenous peoples, and by taking horses from the Spanish and from other tribes (Roe, 1955). Trading among tribes and raids between tribes and toward European colonies aided in the rapid spread of horses in North America (Isenberg, 2000). Conversely, European men also took horses from Indigenous tribes. In 1750 wild horses were spotted on the plains (Roe, 1955). Subsequently, FRH were caught and used by Indigenous people but, according to Roe, Indigenous people preferred to acquire trained horses through trade or misappropriation.

Indigenous people in Alberta became superior horse riders. Their skills surpassed those of the colonizers; riders often rode without saddles and without holding onto reins so that their hands could be used for fighting or hunting (Bearcroft, 1966; Roe, 1955). Riders could drop to the side and shoot arrows under the neck of the horse and ride, out of sight, on the side of their horses. Riders could mount and dismount at a run and pick up a cohort without stopping the horse. The Blackfoot and Blood tribes were known as ‘horse Indians’ due to their superior mastery of horses which they accomplished in an astoundingly short period of time (lending support to the Indigenous theory discussed below 5.2.4). These exceptional skills enabled Indigenous tribes to hold the plains against colonization until repeating revolvers were introduced in battle. The revolver enabled the Europeans to penetrate the plains and also to exterminate the buffalo (Roe, 1955). Another explanation for the ease of horsemanship the

Indigenous people displayed might have been a result of the mechanisms of domestication over millennia (S. Alexander & C. Gates, personal communication, January 30, 2015). If horses were reintroduced to North America they would display traits such as docility, which means they would be easier to ride than wild horses that had never been domesticated. Local knowledge is less prolific (in Western knowledge terms) regarding the history of the horse in North America than documented history, however, policy development needs to consider perspectives from multiple realities if policy is to be accepted by Indigenous and other local people.

Horses were an important part of Indigenous culture. Taboos, symbols, songs, legends, religious celebrations and rites revolved around the horse. Unlike Europeans, the Indigenous peoples preferred pinto horses and they painted and decorated their horses. Markings on horses were held in high esteem and many held special significance (Bearcroft, 1966; Roe, 1955). For instance, the markings of ‘medicine hats’ on horses, which consisted of colour covering the ears and the top of the head, were believed to protect the horse and rider from arrows (Hubert & Klein, 2007).

5.2.4 Alternative Theor(ies) on FRH from Indigenous Perspectives

Contemporary origins or reintroduction of horses to North America are not as clear as once thought. Once Indigenous perspectives are included a new debate regarding horse origins surfaces. Indigenous horses in western North America are thought to have originated from descendents of Iberian horses and were known by numerous, and often derogatory, names some of which included: ‘Indian’ horse, Cayuse pony, Spanish barb, Spanish mustang, Chickasaw pony, and Seminole pony (Bearcroft, 1966; Oelke, 1997; Roe, 1955). It has been suggested that

horses introduced by the Spanish were genetically closer to wild breeds than other European breeds. Ancestors of Iberian breeds such as the Sorraia may be genetically connected to FRH in North America. Some FRH in North America represent breeds that are rare. For example the Sorraia horse is close to becoming extinct and the surviving bloodline may be present in North American FRHs (Jansen et al., 2002; Oelke, 1997). The argument can be made that FRH provide, in part, a behavioural and perhaps genetic record of the ‘original’ horses that populated the rest of the world. Those in opposition argue that the damage caused by FRH, because they are an introduced and exotic species, outweighs the potentially small benefits that possibly diluted genetics may bring.

Existing theories on the origins of FRH in the Brittany triangle of B.C. are being questioned and examined by FONV. The legal aspects of the horses of the Brittany triangle were introduced in the legislative arena section. The Xeni Gwet’in First Nations government and FONV argues for FRHs to be recognized as legitimate wildlife that also have a strong cultural connection to Indigenous people of the area. The FONV (n.d.) website cites soon to be published research that casts a shadow on historic documentation suggesting the Brittany horses originated from Spanish ancestry and were brought to the area by Tsilhqot’in First Nations in 1740. Recent DNA samples found little Spanish ancestry in the horses. Rather, origins point toward the Canadian Heritage Horse breed (see section 3.3.2). Furthermore, the puzzling possibility that Yakut horses, an ancient horse of Russian heritage, also contributed to Brittany horse origins has been brought to light by the same study. The puzzling aspect is that the Russian people only brought a small number of horses to Pacific coast fur trading posts.

To further complicate conventional understandings of horse origins in North America, Henderson (1991) introduces a theory presented by the Dakota/Lakota Elders that contradicts western science based theory of horse reintroduction. The arguments presented by Henderson may be refuted by stronger scientific evidence and by the lengthy process of horse domestication that re-introduced North American horses were presumably exposed to, however, I include these arguments as worthy of looking into because of a potentially shared perspective by Indigenous people in my research area. Indigenous perspectives will, or should, matter in decisions regarding policy. According to the Dakota/Lakota oral tradition, the Indigenous horse did not become extinct in North America and was part of Indigenous culture long before European contact. Several arguments outlined in the paper by Henderson (1991) that deserve consideration and provide potential direction for future research are presented in Table 5.2.

Table 5.2: Arguments Supporting Oral History of Horses Being Present Prior to European Colonization

Arguments from Dakota/Lakota Elders for horses being present in North America prior to European horse reintroduction
<ul style="list-style-type: none"> • The horse is Indigenous to North America. Biologists can offer no scientific reasons for horse extinction in North America and not in Eurasia. • Absence of post-glacial remains could be explained by Indian/Dakota cultural traits and environmental factors. Horse remains were treated in a way that would make them difficult to find by archeologists. For example, horse bones would be absent from village dig sites because of an aversion to eating horses. There were no ceremonial horse burials. • The astounding horsemanship of Prairie Dakotas within a few short years of the appearance of the “Spanish horse,” provides evidence for a horse culture exhibiting a traditional skill. • The government pony-extermination policy may have destroyed evidence of the Indigenous ponies and deprived scientists of unique specimens. • Petroglyphs are difficult to date so they are unreliable as evidence

(Henderson, 1991)

The Dakota/Lakota people have an extensive horse vocabulary where they differentiate between their own horses and introduced horses by Europeans. This begs the question, why would these differences exist in the language if the first horses known to Indigenous people arrived with the Europeans? Evidence of Indigenous horses prior to 1690 also exists in French and Dutch colony manuscripts. Unlike the Spanish or European breeds the Indigenous North American horse is described as resembling the wild Tarpan or Polish horses.

Evidence supports that Indigenous ponies were exterminated when Indigenous peoples were sequestered to reservations,

...the U.S. government ordered them [the horses] rounded up and destroyed to prevent Indians from leaving the newly-created reservations. Although there is extensive evidence of this massive slaughter, no definitive evidence has yet been found to substantiate the Elders' other claim [that the Aboriginal North American horse preceded European horse re-introduction] (Henderson, 1991, p. 1).

I am suggesting that the claims made by the Dakota/Lakota elders deserve consideration. I will not qualify Indigenous knowledge, primarily because I am not qualified to do so but also because respondents were already leery of researchers that had judged or evaluated their ideas. I strive for respondent voices to stand on their own. I believe exploring alternative knowledge routes to FRH origins will only broaden and enrich current ways of thinking.

Sections 5.2.3 and 5.2.4, although not based on respondent discourse, begin to provide insight into the research question regarding meso-level discourses and their relationships or disconnects to one another on how FRH are classified. The same sections begin to explain why some groups may vary in their acceptance levels toward FRH. As described above, Indigenous positions view FRH as culturally significant, original, wildlife species whereas government and

range health worlds position the species as feral. Very different management strategies could be deemed as acceptable based on these vastly different positions.

Timelines are debated much like FRH origins. I now turn to local understandings of when FRH reoccupied North America and more precisely Alberta. Local descriptions on free roaming horse phenotypes and how people classify FRH provide a window into positions of respondents and their corresponding worlds. How people classify and understand FRH can help policy makers fill knowledge gaps, add more dimensionality to decision making and make fully informed decisions.

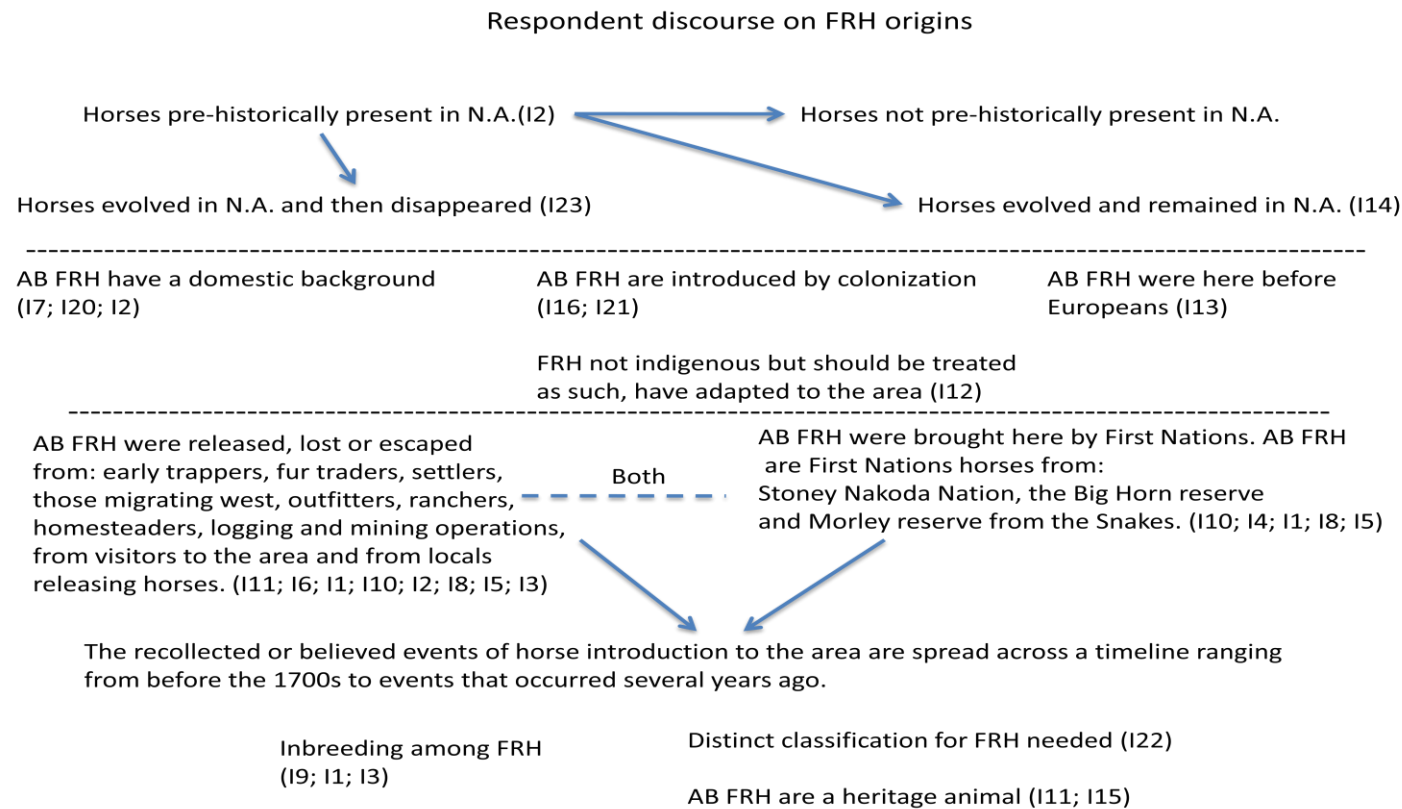
5.3 Described Timelines, Ancestry, Phenotypes and Classifications of FRH

5.3.1 Time Line of FRH in Alberta

Research questions are answered in the next three sections through discussion on how local cultures have historically interacted with FRH and in some cases how they continue to do so. Respondents understood and commented upon when and how FRH first occupied Alberta in very different ways. In keeping with archeological research, most respondents believed horses prehistorically occupied North America and that they had evolved on this continent (Simpson, 1951; Kirkpatrick & Fazio, 2010). Notzke (2013) cites emerging evidence including petroglyphs, fossils, geoglyphs, and Indigenous oral history (p. 400 endnote 7) to support that horses might have survived the megafaunal extinctions at the end of the pleistocene. Better supported and more abundant evidence corroborates the view that horses did not survive the megafaunal extinctions (Guthrie, 2003; MacPhee, 1999; Haynes, 2009) and furthermore that humans were hunting horses 13, 000 years ago (Kooyman et al., 2001; Kooyman, Hills, McNeil & Tolman,

2006) which might have played a role in their disappearance. Notzke (2013) suggests that if humans were the reason horses disappeared then that could add to the ecological legitimacy for keeping the horses in the wild. Few respondents believed horses were never present in North America and that Europeans were the first to introduce them. Similar to most archeologists' perspectives (or, understanding), most respondents believed that prehistoric horses disappeared from North America and then were reintroduced and arrived in Alberta from the 1700s and earlier to the 1900s. The following section is organized around Figure 5.5 and the discourse presented by various respondents.

Figure 5.5: Respondent Discourse on FRH Origins



The following quotes from respondents share dates and time periods when horses were first thought to occupy Alberta.

I remember my grandparents talking about them when I was little. My grandparents had a sawmill in the Cochrane area in the 40s...so that was way before that (when horses were first there)...I'm sure it was in the 1900s. Whenever domestic horses started getting away (I1).

The horses strayed. I guess this would have happened maybe 1500, 1600 but they got here in 1730 (I4).

the first trappers came here in 1802 and there were horses when they came (I10)

The natives first brought them up from the south probably like 200 years ago...they were introduced when the natives first came up and the Snakes first brought them up...and that's when the Blackfeet and Stoneys first saw them...that would be much more than 200 years ago...they were probably introduced but so are thistle (I1).

In addition to Indigenous perspectives, oral history of horse introduction was shared from the perspective of mountain people who are a combination of like-minded people of Indigenous, Métis, settler and fur trader ancestry. Part of the history of FRH introduction was described in geological terms by speaking of exposed pack trails on the continental divide that are deeply entrenched into the bedrock "...because the trails are far older than the Hudson Bay Company. The mountain trails are pack horse trails. The trails resemble the way people traveled on horses" (I6). From this segment of the conversation I deduced that some of the horses traveling the trails may have escaped, got lost or were released and may have contributed to the FRH population before the arrival of the Hudson Bay Company (late 1800s).

Few respondents including some with knowledge of local oral history believe that a number of prehistoric horses remained in North America or that horses were present pre Spanish horse reintroduction:

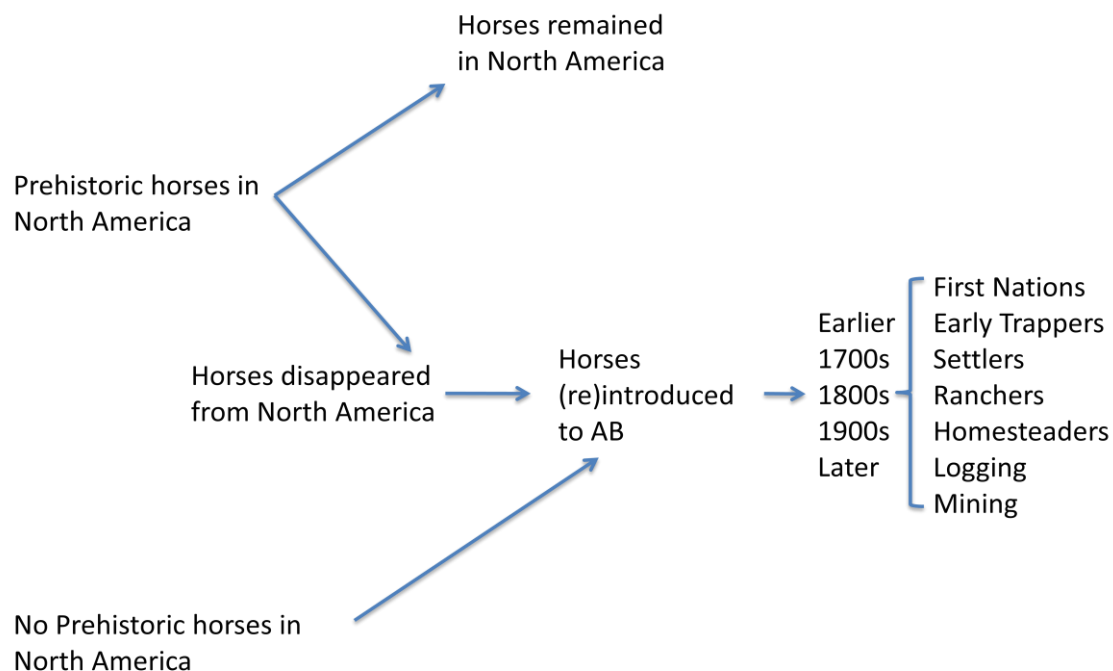
there's a difference between written and oral history of First Nations. I think some of these horses are pre-Spanish mustang based on First Nations people that I know (I13).

I believe that the horses continued to exist after the ice age...there is some evidence that not all the horses died out. There is a grey area in feral because the horses were here and they are here again (I14).

5.3.2 Bloodlines/Ancestry of FRH in Alberta

Several theories on horse ancestry were articulated and reviewed in earlier sections of the thesis. Here I present discourse from local people on horse origins. Figure 5.6 depicts the varied perspectives of how horse origins were described. Respondents who agreed that horses were reintroduced to Alberta differed in their positions regarding how long ago the reintroduction took place. The list on the far right contains respondent suggestions of who reintroduced horses to the area.

Figure 5.6: Respondent Positions on Horse Origins in Alberta



First Nations horses were spoken of often when bloodlines or ancestry of the current FRH in the area were discussed. Indigenous people were often associated with initially introducing the horses to the area:

the natives that first brought them in from the south...when you think of the natives like the Stoneys or the Siksika all of them associate themselves with horses...you know that's part of their culture even though they were introduced, so when we look at a wild horse I would say that they are part of the wildness...it's part of their culture and it is part of the wilderness culture here in the east slopes...mostly turned loose from homesteaders, outfitters, or natives...I think most of the history probably does come from loose homesteaders' or ranchers' horses and First Nation horses as well so if you go back far enough the First Nations horses were brought in from the south...I think they also were from First Nations that weren't domesticated, some of them may have been born out there and never used. Even today some of the horses have never been caught or used in any way (I1).

...the Plains Indians had them before the fur traders...they slowly migrated west...a palomino colt [from the area] was DNA'd and it goes back to Spanish bloodlines (I2).

The conversations presented here and others that I heard reveal that some respondents describe FRH as having mustang ancestry while other respondents vehemently oppose association with Spanish origins, "they came from the settlers and from the outfitters...I don't believe that there's any of these horses that date back to when the Mexicans turned them loose" (I3). One perspective from a Indigenous respondent describes the local history of the horses as dating back much further, "they got away from the Mexicans, they got away from the Comanche, they just went wild and those are called mustangs and wild horses too" (I4).

Respondents generally agreed that the initial introduction of FRH to the area by Indigenous people was followed by horses belonging to fur trappers, then homesteaders, settlers and ranchers as well as by pre-mechanized industries such as logging and mining.

The bloodlines that are out there are from when logging lost horses and people are always losing horses around here. Morley up to Bighorn reserve could have lost horses traveling

up and down so those bloodlines could have a little Spanish in them. Some of the horses are from Native people, from logging, from peoples' horses (I8).

When I lived in Rocky I used to buy a lot of horses from the Indians. A lot of those they got away from the miners. They kept the horses in the mines and a lot of those horses got away and that's where they stock provincially...but this mustang bit... I suppose if you DNA'd our horses they all trace back to some Spanish blood maybe some number of years ago. But basically what's in there now is what got away from the farmers and ranchers... We had quite a few. I use to work with pioneer ranch camp. I had quite a few wildies there that I bought from the Indians and they were excellent ponies. We used them on the ranch for years (I5).

As cited in the latter part of the quote (by I5, above) and in the quotations below, more contemporary horse introductions into the area are believed to have also occurred, "most of the horses are feral and I base that upon the oral history of the area. In the 1970s onward, horses were wintered out and some were missed in the gather in the Spring. Pockets of horses then migrated further north" (I6). The story that follows was shared from a primary source describing horses that escaped:

The ranch we live on produced some 3 to 7 hundred horses and that's where a lot of them [FRH] came from. So most of the wild ones are from...domestic stock. The ranch we bought in 73, it was fifteen years later...not quite fifteen...ten twelve years later some horses still showed up with brands on them from ranchers and they got away. Another gentleman near Colman he used to trap a lot of them...were wildies running there all the time some with brands and some without. Some of this stuff that you read about the mustangs...as far as we are concerned that's a bunch of hokey. They are mostly from the locals (I5).

A representative from the cattle industry (I7) concurs that the horses are descendents of local domestic horses "The horses west of the river have a domestic background. A lot got away and end up with the wildies".

There are vast geographical differences in the behaviour, look and potential origins of FRH in Alberta. One group of horses occupying the Ghost Forest was identified as more wild and potentially a breed unto themselves. Some groups of FRH were described as quite tame and

comfortable with people whereas the herds that I observed kept their distance the same way a cautious deer or other grazing animal would in an area where people live.

5.3.3 Phenotypes and Behavioural Traits of FRH in Alberta

I encountered many different descriptions of the horses' appearance as well as photographs, sketches and artwork that people shared with me. The phenotypes of FRH in Alberta varied significantly based on pictures and descriptions that I witnessed. Some respondents viewed the horses as beautiful and healthy while others viewed them as deformed or inbred, "some horses out there have deformities such as big heads and little bodies or big bodies and little heads. Some have big feet or little feet which is a good indicator of a small gene pool" (I9). Respondents in the camp that viewed the horses as healthy spoke of similar and other features as adaptations gained to survive harsh winters, avoid predation and to better navigate the landscape that they occupy.

Plate 5.1: Male Free Roaming Horse in the Winter



Alex Bartholomew

Observing two small herds by her acreage in Priddis one respondent made reference to Spanish ancestry based on their appearance:

if you look at horses from years ago that the Spaniards would have brought, they weren't bringing the nice little arabs and the thoroughbreds, they were bringing the heavier draft type cold blooded horses that could carry a work load. That's what I am looking at over there (I20).

Descriptions of FRH horse behaviour included perspectives of those who capture FRH and train them, "if somebody goes out there and wants to go and catch one and handle it he'll find out it's not like a domestic horse out of your pen. It is wild. That's what it knows and they

are a little different to handle but they are good to handle if they are young” (I10). Adaptation of FRH to the area was also viewed as beneficial by people who historically needed horses that were good at navigating the geography of the area. One Indigenous respondent spoke of the horses as being uniquely adapted to the area as did a spokesperson for the cattle industry (quoted below):

The horses are unique because of their adaptation to the area. They are sturdy, heavy boned sure footed, some are thick and heavy horses. The bands differ. You can see some that look like quarter horse, some heavy horse, some thoroughbred. They are short coupled, a heavy type, not that tall. I saw a good one about 5 years old, 14 hands tall and not that thick, this could have made a good horse, but why catch it? When there are so many horses around. They are wild. I have trained some and they are interesting to work with. They are good in the muskeg whereas our horses would have trouble with that (I7).

An advocate of FRH and the fur trapping industry spoke of the interactions between Indigenous people and FRH that he had observed “their [First Nation] descendents from a far ways back have been coming up here to get horses because they like them. Number one, they were used to mountains, trees, hills, swamps, all these conditions and they just make for better horses for what they wanted” (I10). Two other respondents shared stories of young or timid free roaming horses seeking them (humans) out for protection or companionship (I6; I2).

One grazing permit holder compared cattle that started to revert to a wild state to wild horses. He had also nursed a FRH to health and describes his experience:

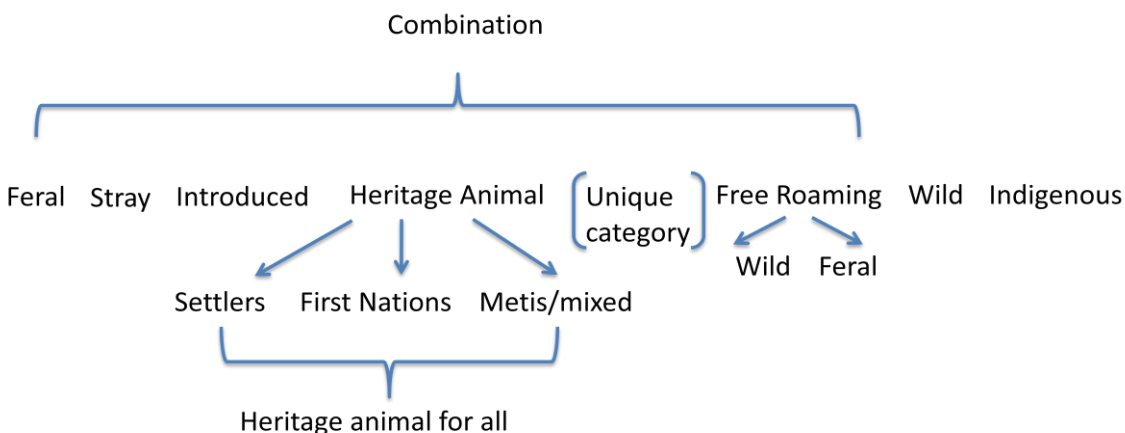
I guess my thought is...they started from escaped horses but you know if they are born in the wild I would hazard a guess that that's a wild horse...I have cattle that get like that. We always get them out but boy after they have been, like if they get segregated from the rest they can get really wild, really hard to manage... We've had occasion to catch, we'll use the term wild horse, he was sick and he was segregated and we caught him and we brought him home, nursed him to health and took him back but it was not like handling any horse because he'd bite, kick and it didn't move like an ordinary horse, like it would jump high in the air and things that you would not expect a horse to do, it would do (I11).

Another concept that seemed to emerge from this section is that the relationships and interactions people have with FRH are varied and often profound. Even traditional ‘tough, hardened’, non-animal rights type men often described moments of interaction with FRH that were meaningful to them.

5.3.4 Respondent Classification of FRH

I present the way people classified FRH on a continuum ranging from explanations describing the horses as feral, stray and introduced, basically as foreign to the area, to explanations on the other end that viewed the horses as wild and indigenous and as basically belonging and being part of the area (Figure 5.7). Meso-level and individual responses help to answer the research question on classification of FRH. One fur trapper and proponent of FRH viewed the horses as a heritage animal for Indigenous people while an Indigenous respondent placed the horses as equivalent to indigenous species and as an animal in need of protection.

Figure 5.7: Local People’s Classifications of FRH



The terms feral and wild were perceived in many different ways. To some respondents, feral had a negative connotation and was related to stray animals or animals that are meant to be living under the supervision of humans while others perceived feral as positive and as integrated into the historic socio-cultural and natural ecosystem. One respondent perceived feral and wild as synonymous. The respondent and her daughter cited the dictionary where they stated feral *is* defined as wild. Feral to them implied horses that are not handled. As a result, both mother and daughter felt FRH were in need of space and a place to live (I20). Yet another respondent stated that FRH are not wildlife or domestic animals but that they belong in a distinct category.

‘Wildie’ was a local term used to describe free roaming horses. Respondents used the term in an affectionate and colloquial manner when referring to the horses. I understand ‘wildie’ as a term stemming from cowboy, Indigenous or Métis culture that was most often used by those with historic or contemporary familiarity with the horses. A short documentary filmed by a local director Feddema-Leonard entitled ‘Wildie’ (2012) describes interactions between FRH and local people and lends further insight to the term wildie. In my research people who used the term ‘wildie’ classified horses along all areas of the spectrum, although when spoken of as ‘wildies’ the horses took on a charismatic quality. For example one manager of a tourist ranch, positioned in opposition of FRH, spoke of providing an authentic experience for tourists when wildies are spotted.

Moving down the spectrum a respondent representing WHOAS viewed FHR as free roaming, wild and with a distinct identity that is separate from indigenous species (I22). The difference between the indigenous designation and FRH having a distinct identity was that as an indigenous species, if their numbers were plentiful, could be hunted whereas the WHOAS

representative felt that the horses should never be hunted. This thinking is in line with a paper describing increasingly blurred lines between nature and culture as well as between wild and feral animals (Reed, 2008). Reed argues that humans have a responsibility to provide varying levels of care to horses that are either being introduced into a wild environment such as horses in the Netherlands or being re-domesticated (adopted) from a wild state (feral horses captured in the U.S.) and all the positions the horses occupy in between. Kindness to the individual animal as well as to ecological networks needs to be recognized in related policy (Reed, 2008).

Two local respondents, one retired and the other who grazes horses in the Bearberry area, described the horses as not having a category and being an entity in and of themselves (I18; I19). FRH were also viewed as heritage animals important to Alberta as part of European and mixed historical settlement of the area (I11; I15). One representative of the ‘mountain people’ viewed FRH as an important animal to the historical and contemporary way of life of the people who live and interact with the Willmore Wilderness area (I6).

Several respondents stated that once a horse is born in the wild and survives, the horse should be considered wild whereas another respondent had a considerable shorter timeframe in mind. She suggested one year of survival ‘on their own’ garnered a wild designation. The same respondent, a newcomer to the area, shared that the horses she had been observing were probably a combination of many of the categories suggested by others. She believed that the origins of the horses were not as important as the horses living and behaving as wild animals after one year (I15).

The manager of a large cattle operation in the area viewed FRH as a resource and maintained that many people, animals, and plants have been introduced to the area or more

broadly to North America over time. FRH were included in his analogy. His main point was that FRH, just as other resources, should be managed properly (I21). The sticky part of proper management is that not everyone agrees on a working definition of ‘proper’ FRH management.

On the other side of the spectrum were those who viewed FRH as feral, stray and/or introduced. The government spokesperson described FRH as adding to the species of the area but not necessarily in a beneficial manner. “...feral horses add to the species that we have but should not be necessarily valued in the same way” (I16). The government describes the horses as part of the heritage of the area but nonetheless as animals that are introduced, feral and potentially damaging. Flexibly categorizing FRH as a potentially invasive species gives the government freedom to control horse numbers as they see fit. Local interest groups that are inline politically with the government may also benefit from a lack of concrete definition of FRH because horse numbers can be increased or decreased with few checks and limitations.

Lastly a breeder living across from the Stoney reserve described the horses as nothing more than feral and stray, in need of being captured and returned to their owner or sold if the owner does not come forward (I17). The respondent spoke of using the Brand Act (2000, c. B-6), Stray Animals Act (2010, c. S-20) and domestic animal brand inspectors to manage the horses (see section 7.9.10 for further discussion and definition of the Brand Act). Two local respondents contradicted categorizing FRH under these acts or policies due to the following argument “...These animals do not have a brand, normally there’s no brand...therefore you can’t enforce the branding act nor the stray animals act...because they don’t come in any category. They are an entity by themselves” (I19; I18). The breeder did also mention there being large herds of

Stoney horses when the treaty was signed and that currently there are many horses that continue to wonder on the reserve unrestrained.

The [horses] around here I don't think have an extensive history. I'd say they are feral and stray. Well the Stoney's had horses when they signed the treaty in '77 (1877) and use to keep large herds of them and if the fences weren't there they would get off the reserve...the Indians use to ride extensively and were super horsemen but today very few of them are but they still got the horses...a few get into the rodeo...(117)

While limited DNA testing has been conducted on the horses in the area, based on historic horse use and movements it appears that free roaming horses in my research area could represent a varied combination of descendants from the Iberian horses imported by the Spanish (if they remained and survived in the area) and breeds imported by northeastern settlers in addition to strains from more recently released or escaped horses from surrounding farms, ranches, outfitters and First Nations lands (Hubert & Klein, 2007). Percheron draft horses and other horses used for heavy labour were used in Alberta before machinery use became wide spread (Bearcroft, 1966). Presumably some of these horses escaped or were released once they were no longer needed and interbred with existing free roaming horse populations. As a result of a blurred ancestry, both camps of thought can use arguments related to bloodlines to their advantage regarding the horses in the research area.

Plate 5.2: Example of a Herd of Free Roaming Horses



Alex Bartholomew

The words chosen to define the horses are dependent on the perspectives and political intentions of those using them (Rikoon, 2006). Socially and culturally based arguments tied to FRH include the history of settlement of N.A as well as the role horses played in Indigenous resistance to colonization. In conversations pertaining to FRH the focus has been on biology and ecology, cultural arguments have often been neglected. If the FRH in the research area are related to Indigenous horse stock or to original settlers' horses then they are a part of a living history. Conflict between people and FRH should primarily be investigated by exploring the

social processes and secondarily through the use of biologic and ecologic science (Linklater, 2002). Again, FRH are mainly a human problem and conflicts are not based in an acontextual arena where only ecologic considerations come into play. FRH exemplify a struggle for power over resources and over who has the power to make decisions of how land should be used. I am in agreement with Rikoon (2006) in that FRH represent a struggle over which (who's) vision of the landscape should be implemented. The geography of where indigenous or reintroduced horses came from, why they were brought over to N.A and as a result how they were used upon arrival sets the historic context for the human FRH conflict.

The next chapter describes accounts of contemporary conflicts and benefits between humans and FRH in Alberta. The last segment of the following chapter also presents reported predator-prey relationships pertaining to FRH because these relationships are viewed as both a benefit and a problem.

CHAPTER 6: RESULTS AND ANALYSIS-PROBLEMS, BENEFITS AND PREDATOR

PREY RELATIONSHIPS WITH FRH

This chapter focuses on several research questions that center around contemporary problems and benefits of FRH-human interactions. Specifically addressing how local people identify potential or existing problems with FRH as well as how local groups and individuals vary in their acceptance levels toward FRH. Research questions on how local cultures interact with FRH and meso-level (group) discourses regarding problems with, and benefits of, FRH are discussed.

Reflexive Excerpt 8

I believe my role is to try to describe, thoroughly, the perspectives of those who expressed their ideas to me. My aim is to try to judge less and to include varied perspectives, some of which may have previously been ignored, silenced or pushed to the side as irrelevant. I hope to refrain from discrediting or excluding certain points of view. The ideas that respondents presented to me are part of a mosaic, an ever-evolving story that has many different perspectives. Some ideas are more complete and better developed while other ideas are at an earlier stage of evolution. Throughout my work I strive to include individual, composite and organizational stories and discourses as I understand them. I attempt a democratic representation of perspectives.

6.1 Geographical Discrepancies and Grouped Responses

The area inhabited by FRH is large and includes major physical, economic, historic and social geographical differences. Hence, these local geographic differences play a role in how FRH are perceived and received by local peoples. Hinton, for example does not have extensive grazing lands or grazing leases whereas many respondents surrounding Sundre are part of, or connected to, grazing leases. Those who have an economic interest in cattle grazing may be more cautious regarding their responses because FRH may have personal economic consequences for them. Those termed ‘mountain people’ in Grand Cache, for example, view FRH as a part of a

way of life and as historically relevant to the area. Policies that reduce FRH numbers have been negatively received by the ‘mountain people’ and viewed as an infringement from urbanites. Land that lends itself to heavy agricultural uses, grazing, forestry and multi-use recreation is generally more prone to human-horse interactions and potential problems.

I grouped the respondents (presented in Table 5.3) according to similar perspectives that they presented (through my interviews with them) on FRH. Respondents who shared similar attitudes, focus or themes, and responses to questions, were grouped together. Also, their use of similar terminology to describe FRH and their place on the landscape led me to classify respondents together. Many respondents belong in more than one group, nevertheless I placed them with respondents where perspectives seemed most aligned. Again, not all grouped respondents agree on all issues discussed, however, many of their responses were connected to one another. Table 6.1 outlines the descriptive criteria used to identify similarities of people grouped together. The criteria consist of 1) identifying key attributes of respondents (e.g. occupation, livelihood, experience with FRH, general experience with horses) 2) grouping what respondents have in common (e.g. positive or negative positions toward FRH) and identifying a shared focus/message (e.g. FRH are an introduced species comparable to invasive species).

Table 6.1: Respondents Grouped According to Experience with FRH and Positions Toward FRH

Grouped Respondents	Descriptive Criteria for grouped respondents
Horse Handlers (4)*	1. Outfitters, wardens, park patrollers, FRH permit control, people who work with horses and on the land. Experience catching, chasing and handling FRH. Experience with capture permits. Historic lineages to the area (settler families or multigenerational ties to the land). 2. Middle to positive perspectives toward FRH. Focus is on keeping FRH on the land using management techniques involving local people who know the land and how to handle horses.
Government of Alberta (2)	Alberta government respondents connected to AESRD. One respondent was a spokesperson and the other conducted research for AESRD. 2. Respondents frequently refer to government research. Support lower numbers of horses on the land. Negative to middle perspectives toward FRH. Focus is on FRH being feral animals and keeping #'s controlled. FRH are an introduced species comparable to invasive species.
Local (independent) Research (2)	1. Local self-proclaimed/independent researchers of FRH. 2. Positive perspectives toward wild horses. Different levels of wild horses exist. Focus is on the well being of FRH, preserving the 'truly' wild stock and keeping FRH wild. Emphasis on FRH being culturally linked to Indigenous people.
Breeder (large specialized) (1)	1. Professional, large, quality pure bred horse breeder. 2. FRH are not wild animals. FRH belong to someone, they are stray and should be taken care of by the owner. They should be brought to the brand inspector and dealt with as stray animals. Negative perspective toward FRH although small numbers on public lands may be tolerated. Not necessary to get rid of all of them unless they are on private land.
Indigenous people and those with similar perspectives (3)*	1. Have extensive experience with horses and/or FRH. Respondents were Indigenous or held closely related beliefs about the horses. 2. FRH are a natural part of the land. Same as wildlife. If there are many it is acceptable to use horses as a meat source. Some respondents argued hunting is acceptable. Protect wild horses because there are not too many left. Positive perspective toward FRH. Horse meat packing plants are important to the area. Emphasis was on hunting, meat packing plant, and spiritual connection.
WHOAS (2)*	1. WHOAS members. Concerned with well being of FRH. 2. Protect FRH via legislation as a species separate from wildlife and from stray domesticated animals. Support an increase in FRH numbers, acknowledge some minor problems that WHOAS can help alleviate if placed in a role of partnership with the government.
FRH Observers (2+1)*	1. Live on an acreage or retired. Domesticated horse owners. 2. View FRH positively. Should be protected. FRH are wonderful to observe. We enjoy them. They may cause problems for others i.e. cattle grazers but precautions with our own horses have been fairly successful at separating our horses from FRH.

Grouped Respondents	Descriptive Criteria for grouped respondents
WWF (1)*	1. Indigenous people, Métis mountain people and multigenerational settlers (spectrum of mixed European settlers to the area and Indigenous people). 2. Positive perspective toward the horses. FRH are part of the land and part of the way of life here. Traditional and local knowledge should be used to complement science and policy.
Métis (1)	1. Eastern Canadian Métis. Owns a resort. 2. FRH are not an important issue/topic. Slightly positive attitude toward FRH. FRH are the same as cattle. Wildlife should have more rights than FRH
Competition (2)*	1. Warden, grazing lease, large cattle grazing operation. 2. FRH numbers are too large. Positive attitude toward FRH but reluctant about space and resources. FRH do belong and have a place on the landscape. 3. FRH compete for land and resources, for forage with cattle, for forage with wildlife, and for land with humans. They cause damage by breaking fences and overgrazing certain areas.
Business and Industry (2+1)*	1. Large cattle grazing operation. Large operational cattle ranch that also caters to tourists. Forestry industry perspectives. 2. There are too many FRH on the land and they cause too much damage. 3. FRH destroy fences, deplete forage on grazing leases, trample or eat seedlings, destroy forestry efforts at replanting and reclaiming roads especially around water bodies.
Cattle grazers (2)*	1. Representative for Alberta beef and grazing lease owner. 2. Positive perspective toward FRH but most intermediate position of all respondents. Support current or slightly higher FRH numbers. FRH have not been much of a problem for the respondents. 3. FRH belong on the land if their numbers are carefully managed and monitored.

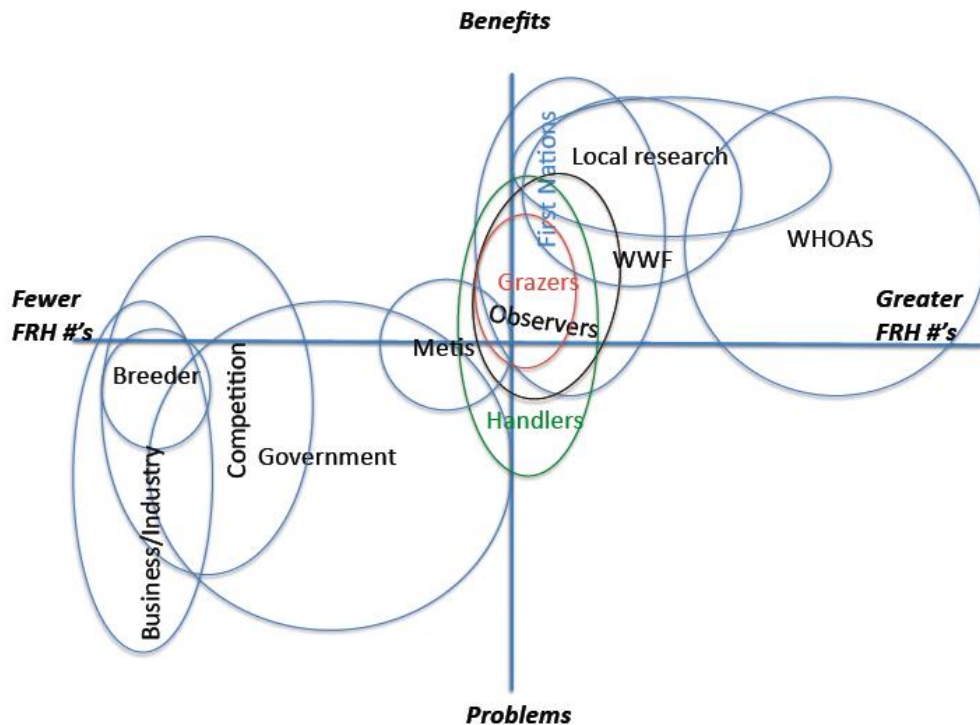
* one or more respondents also belong to other group(s) in the table

6.2 FRH Population Numbers, Benefits and Problems

Benefits and problems that FRH contribute were often linked to FRH numbers. This was supported by 10 separate statements made by respondents which included “problems depend on horse numbers”, “if the numbers are too high then...”, “if the population is high...”, “...if there are too many”. Respondents frequently discussed and linked the two areas, population numbers and problems/benefits. All respondents with the exception of one (who was unsure) suggested that at least some horses should remain on the landscape. Those concerned with protection often spoke in terms of FRH numbers being lower than in the past and of the danger of numbers getting too low. Those concerned with problems FRH cause wanted better management and/or incentives to manage the horses themselves.

Figure 6.1 depicts relationships among respondent groups and how they described FRH numbers and benefits or problems associated with the horses. I based the positions (depicted by the ellipses) of respondents on sorted and grouped interview transcriptions and on written or published discourse. All quotes were sorted into respondent categories (ellipses) and then all quotes regarding horse numbers and benefits and problems were evaluated and compared within and across respondent groups. Larger ellipses mean that there was more variety and less agreement in responses given by respondents than in smaller or thinner ellipses where there was more agreement between respondents in that category. Ellipses that are longer horizontally mean there was more discrepancy between ‘benefits’ and ‘problems’ that FRH bring than in shorter ellipses. I use color as a way to separate and distinguish the ellipses where they are densely overlapping.

Figure 6.1: Respondent Positional Map of Free Roaming Horse Population Numbers and Benefits/Problems.



Business, industry and one high-end breeder from the ‘breeder’ category viewed FRH as providing few benefits and expressed an interest in low FRH numbers on the land. The breeder viewed FRH as a nuisance but not necessarily as causing serious problems. Business, industry, government and those who viewed FRH as competition discussed FRH as causing or contributing to serious problems. Government, industry and business mainly focused on rangeland health and grazing and/or forestry rights. One land lease owner and warden also expressed great concern for grazing competition and competing pressures for the land. Respondents classified as Métis, observers, handlers and grazers all hovered around the midpoint

with regards to FRH populations. Grazers occupied the most intermediate and non-committal positions. Most of the groups that centered around the intersecting midpoint in Figure 6.1 focused on benefits rather than on problems (with the exception of the Métis respondent). Figure 6.1 shows partial positions of those respondents who were grouped in Table 6.1. Respondents engaged in local research described FRH as providing many benefits as did Indigenous respondents and those associated with the WWF. WHOAS supported an increase in FRH numbers more than the other groups in the positive quadrant but they also described potential or existing problems more than some of the other groups who supported FRH. Long time residents with an extensive long-standing ancestry in the area (including wardens, outfitters and those who spent most of their lives working on the land) also spoke of benefits that the horses provide. Figure 6.1 and the use of social mapping in this way can be a useful tool for those driving policy because it illustrates how and why (problem, benefit, population numbers) groups or individuals are in agreement or disagreement. Sections 6.2-6.4 answer the research question on meso-level (grouped) discourses regarding problems with FRH because they present grouped discourses on how people respond to problems with FRH. This type of inquiry is important because it adds dimensionality to decision making by helping to fill knowledge gaps. Recognizing and incorporating interconnected dimensions is a necessary component of creating successful policy addressing wicked problems.

6.3 Problem Categories

The categories I created to question respondents on potential problems that FRH cause were merely guidelines to prompt conversation and to provide general organization for the

material gathered. Conversations often spilled over to many other areas. For ease of analysis and to provide structure I generally presented conversations within these boundaries however as the reader by now has discovered, the quoted responses often meander, overlap and spill over into other categories. Following the short answers presented below I delve into a more detailed explanation of the positions toward problems and benefits shared by respondents.

6.4 Grouped Answers to Problems FRH may Cause

Government related respondents were cohesive in their answers and opinions. As a group, government respondents often answered short questions similarly. Business and industry respondents also responded similarly to all short questions. Respondents related to government, industry and business provided similar language to describe their opinions and often referred to science. The wardens and grazing land lease owners were not as cohesive in the ways they answered questions. Some saw horses as more problematic than others. The broad differences in opinions led me to separate these respondents into three categories: 1) (handlers) those who were like minded and generally in favor of FRH on the land and who saw FRH as causing minimal damage, 2) (competition) those who viewed the horses as causing significant problems or damage, and 3) (grazers) those who occupied intermediate positions and gave answers such as “depends on numbers”, “maybe” and were reluctant to commit to one side or the other (see Figure 6.1).

Table 6.2 provides generalized information. Details were lost or distorted when I removed meaningful explanations. For example, some ‘no’ type answers were a lot stronger, extreme or more decisive than others. Removing the detail and the explanations given to

accompany these short answers can be misleading. I urge readers to view Table 6.2 as a broad generalization and direct them to the detailed quotes provided a nuanced and more fully informed picture of FRH-related problems.

Table 6.2: Generalized Short Answers to Problems FRH may Cause

	1 Compete for grass with cattle	2 Cause Vehicle collision	3 Pollute water bodies	4 Stallions steal/mate domestic mares	5 Carry and transmit disease	6 Compete for grass with wildlife	7 Trample plants	8 Destroy rec., spiritual, private land
Handlers	No	No	No	Yes	No	No	No	No
Gov.	Yes	Dis.	No	Yes	Yes	Yes	Yes	Yes
Local Research	No	No	No	Yes	No	No	No	No
Breeder	No	No	No	Yes	Yes	No	Yes	Yes
Indig. People	Yes	Yes	No	Yes	No	Yes	No	No
WHOAS	No	Yes	No	Dis.	No	No	No	No
FRH Observers	No	No	Dis.	Dis.	No	No	Dis.	No
WWF	No	Yes	No	Yes	No	No	No	No
Métis	No	No	No	Yes	No	No	N/A	No
Compete	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Dis.
Business and Industry	Yes	Yes	Yes	Yes	No	Yes	Dis.	Dis.
Grazers	Dis.	No	No	Maybe	Maybe	Maybe	Yes	No

*Yes=all respondents in the category agree with the statement (full statements and interview questions appear in Appendix 1), No=all respondents in the category disagree with the statement, Maybe=all respondents in the category think the statement is a possibility, Dis.=disagree-there is disagreement among the expressed perspectives in the category.

6.5 Grazing Competition with Cattle

Grazing is one example that clearly illustrates the challenge of various complex positions to policy. Understanding what is ‘going on’ and how people see grazing, FRH and their ‘rights’ is an important foundation for decision makers. In this section I present respondent discourse in relation to FRH sharing or competing for forage with cattle.

Respondents constructed their answers in a way that highlighted either the benefits or the problems that FRH grazing caused them personally, hence I organized their quotes in categories labeled as benefits or as problems in Table 6.3.

Table 6.3: Respondent-Identified Problems and Benefits of Free Roaming Horse Grazing

<p>Problems</p> <ul style="list-style-type: none"> -break fences -eat too much grass-few in number are good because they are a part of heritage -FRH graze the area before cattle come in <p>Benefits</p> <ul style="list-style-type: none"> -re-fertilize (numerous respondents) -re-seed (numerous respondents) -horses move around more than cattle (seen as both a benefit and problem) <p>Neutral</p> <ul style="list-style-type: none"> -geographically not enough horses here to cause problems -don't have cattle grazing areas here

Grazing rights were often a concern for those who were involved in the industry, especially when grazing was strongly economically connected to their livelihood. Although not all respondents who had and used a grazing lease complained of FRH overgrazing their land, those who spoke of over grazing as a problem agreed that horses were hard on the grass and that they are competitive with cattle (6-all numbers in parentheses indicate how many respondents made similar statements). Other negative statements included that FRH pawed grass in the wintertime which caused further damage and that during years when there are too many FRH, overgrazing is a problem (2). Conversely proponents of FRH insisted that they do not over graze because they move and occupy different areas (such as the up lands) than cattle (3):

if there are choices such as on our landscape, here, horses are upland grazers...cattle will use the litter low lands because they are higher in protein and the horses prefer the upland grasses...I think it's a scarcity question...we do not have a scarcity of upland grasses in Alberta (I13)

Horse movement was seen as both a benefit and a problem depending on the position of the respondent. The first quote is from a protection-oriented respondent positioned against a cattle grazing business position:

There are only about 350 head of horses...they move in tens of thousands head of cattle...the horses are grazers and always on the move, cattle will actually just stay by the water and stay in one location and eat it all down until there's no grass there and they have to move on. Because they [FRH] have a domestic origin, they don't tend to mob graze like the buffalo or bison or even like we try to re-create with our cattle by moving them frequently...where there's water and grass and some protection that is where they [cattle] are going to stay...the range health is basically negatively impacted [by cattle] (I22)

Disagreement over horse grazing physiology included that horses bite grass off and thereby do not kill the plant unlike cattle that directly tear plants from the ground (Table 6.4).

One economically invested grazing lease holder insisted that FRH trample and paw at plant growth and are thereby harder on grazing lands than cattle (I18).

Table 6.4: Comments on Horse Grazing Physiology

<p>Statements Focused on Problems</p> <p>“A horse is way harder on grass than cattle is because they tramp it with their feet, they paw it in the winter and it's hard on your root systems, if you got horses on domestic pasture horses will go right down eat the dirt and almost eat the roots. On domestic pasture horses are way harder on grass than cattle are” (I18)</p>
<p>Statements Focused on Benefits</p> <p>“No. Horses don't destroy grazing like cattle do. Cattle have no front teeth, they tug on the grass and pull it up, horses will bite it off” (I2)</p> <p>“They have sharp front teeth that don't kill the plant at the root by pulling it out like cattle</p>

Statements Focused on Benefits

do” (I14)

“Horses are grinders. In fact they do that landscape a justice because they will grind off the scrub will and bring up more grass for the animals” (I13)

Four proponents of FRH also spoke of FRH bringing benefits to the land through fertilizing and reseeded for example. One Indigenous perspective included the idea that all grazing animals should be taken into account when considering land use:

Horses and wildlife belong together. They are meant to coexist but we over burden some of these areas. Grazing areas, leasing lands, the only concern is on agricultural capacities...we should be concerned about wildlife as well. Take all animals into account for grazing. There is overloading with domestic animals. Horses should be in the same category as elk...it is all connected (I12).

The ideas that currently an overload of domestic grazers is present on the land and that they are given preferential access to grazing lands was articulated. One Métis respondent said that “...there are people out there who think that every blade of grass should have a cow chewing on it” (I8). The difference between one Métis respondent (I8) and one Indigenous respondent was that the Indigenous person (I12) considered FRH wildlife while the Métis respondent considered FRH domesticated grazers comparable to cattle.

Two other respondents spoke of the conflict being between people rather than of horses causing problems. Issues concerning inequality and not being heard were expressed, especially from Métis, WWF and Indigenous respondents. People creating and implementing policy as well as the scientific community were implicated for ignoring local knowledge and the suggestions

made by people with practical experience with the land, wildlife and FRH. This broad discussion is expanded upon in the section 5.1:

It was a conflict of interest between people. The cattle people wanted the land for themselves and didn't take into consideration the people who were using the land for guiding and other purposes. The horse people did not have a chance because they were less organized and less vocal as a group than cattle stakeholders (I6)

The engagement of local experts and knowledge holders would be the first step necessary to minimize people feeling excluded and ignored by decision makers (as articulated in the quote above). One suggestion that I make in section 8.4 for areas that are prone to conflict is to define specific 'management areas' and to create local strategies that take into consideration local horse populations, socio-cultural, political, economic, and ecosystem characteristics. Furthermore, local members of these 'management areas' could be engaged by decision makers in the policy process. I make further recommendations in sections 8.4 and 8.5.

Sections 6.6-6.13 provide further discourse on problems and benefits of FRH and explicitly answer my research question on what local people and groups identify as potential or existing problems. The sections also provide insight into the research question on why interest groups vary in their acceptance levels toward FRH.

6.6 FRH and Vehicle Collisions

Several camps of thought existed regarding vehicle collisions, including those who thought FRH caused vehicle collisions similar to or less frequently than other animals, both wild or domestic (5), those who thought FRH were inclined to remain by the roads because of better grazing and fewer flies (3), and those who thought FRH were too wild, cautious or observant to

remain by the roads (2). One respondent felt that there are too many roads today in comparison to the past and that roads interfere with wildlife and FRH habitat (Table 6.5):

we had to get the horses out of there anyway because when we started building all these fast highways and all these transport roads the horses can't live along those things because the horses will come along and cross the roads in the morning and at night and be standing on the bridges fighting flies and all sorts of things in the summer at night and then they'll get killed with the traffic...they used to call that road the meat maker...it's going to be pretty hard for anything to live pretty soon with all the traffic (I3)

Table 6.5: FRH and Vehicle Collisions

Cause Vehicle Collisions

“they can but so do deer, so do foxes, so do the moose. Moose are much bigger and more dangerous than a horse” (I15).

“No, horses are observant...maybe in some areas...Our lease is fenced, the part of our lease they run on they don't get on the road but it's possible” (I11).

“Your best grazing is on the roads [along the sides of the roads] and that's where your high activity of logging trucks and oil trucks is” (I18).

“I know two individuals who have had collisions with horses. One right here in Sundre and the other in Hinton” (I9).

6.7 FRH Pollute Water Bodies

The same argument regarding the deposition of manure into water systems or bogs was argued to be both a benefit and a disadvantage by those responding. Several respondents articulated that manure added into water bodies by FRH or cattle increases the sediment load and can be detrimental to the environment. For example one proponent of FRH stated, “wild horses use watering holes in a way that does not cause riparian damage and cattle do” (I13), compared to an opponent of FRH who affirmed, “they [FRH] are definitely adding to the sediment load and

I think that they are causing a lot of issues in terms of erosion, stream bank erosion and also depositing manure in the water course itself” (I21).

A positive argument made by a local researcher was that icy marshlands and the muskeg were fertilized by the horses all winter which resulted in taproots being sent down that help hold down the water (I13). Along the same lines an Indigenous elder stated that, “what the horses end up doing is making drainage from the bog because of trampling...they purify the water so that it doesn’t get stagnant” (I12).

A negative opinion expressed by a person with a cattle lease regarding FRH occupying an icy lake was that there was an abundance of defecation, urination and overgrazing in and around the lake (I18).

Several respondents compared cattle and FRH. All comparisons between cattle and horses indicated that cattle had more negative impacts on water bodies (4):

they [FRH] come down and drink and they go back out...the cattle come in and hang around right there and they trample it...horse won’t drink dirty water but a cow will...these horses, the average is probably between 5 to maybe 8 or 9 horses to a herd so they are not there all at the same time, cattle there’s a hundred or 150...anywhere from 50 to 150 (I2)

Surprisingly to me, one respondent who spoke of cattle affecting the land more negatively than FRH was associated with a collective organization representing the beef industry. One argument declared cattle trampled and mucked around in water bodies whereas horses were thought to drink and leave (2). The same two respondents spoke of the concentration of cattle in a particular area in comparison to horses that are dispersed and not present in such high numbers (2). One respondent in the cattle industry described the hoof of a horse as causing less damage than the hoof of a cow. The following quote sums up this section on pollution with an altogether different

perspective, “I think any pollution would come from the trucks and from the bulldozers and stuff that clear all the land for the gas and oil lines” (I15).

6.8 Free Roaming Stallions Breed or Steal Mares

That FRH steal and breed domestic mares was agreed upon by almost all respondents except for two who stated that it does not happen in their area. I organized responses into two groups, one group that spoke of practical solutions and another group that reported experiencing persistent problems. The ‘solutions’ based responses included the presence of and maintenance of fences (5) (see excerpts below), owning aggressive stallions (1) or only owning geldings (1). However, not all respondents viewed fences positively. For example one Métis respondent (I8) and one back country horse breeder (I5) wanted fewer fences on the landscape. Outfitters who historically experienced the land without fences associated freedom with setting horses free and then gathering them when they were needed. One Indigenous respondent spoke of the detriment of artificially created boundaries that hinder animal movement:

There are actually two feral herds of horses here. The one that is here most of the time has 9 adults 4 foals this year and they are very adept at walking across barb wire fences coming across the creek and coming to visit my mares. I see them close to my horses probably...once a month during the spring and summer time. Once my mares start cycling in the Spring the stallion likes to come over and have a little visit...Yes that would be a problem but that’s why I have four strands of barb wire (I20).

the only problem we ran into was when we were in camp and the free roaming horses were coming in and behaving aggressively toward our grazing horses...then we left and that solved the problem and the free roaming horses left us alone...one mare came to us on her own while we were on a trail...our horses were grazing on the trail and she just joined us...she is gentle enough for kids to ride her now...the horses here are a part of a way of life (I6).

Also encountering aggressive stallions while riding domesticated horses was discussed and the resolution of those confrontations was for horse and rider to leave. One respondent who captures and uses FRH on his ranch used domestic mares as bait to catch FRH:

well they've come in for our mares yea...we caught a few that way...my son runs one wildie stud that he got years ago and abandoned domestic mares with him, so he's got lots of half wildies that he raises all the time...particularly young stallions they want bands of their own and they want companionship, so then they'll come in...the last few haven't banded up, they take off before we could get them...because we own a number of stallions now we don't lose them to stallions...they can't come in and take them because our studs are pretty aggressive as far as keeping them away and in those cases the wildies are smart enough too...so in that respect they are not taking stock away but as I say we have lost mares and they [stallions] were of nuisance a number of years ago (I5)

Another aggressive attack on domestic horses was shared but the experience was described somewhat positively:

we hobbled our horses when we were waiting for trips and the wild horses would come down and the stallions would attack or try to breed the mares...attack the geldings in hobbles you know and claw them up pretty bad, jump on them and try to chase them away I guess...some of them were quite scarred up you could see where their feet and where they had been bit...and the mares were gone...we knew what we would be doing for the next three days...now when I look back it was fun but some of them (our horses) we never did get back so we contributed to the gene pool (I1)

Fence damage, fighting with the domestic stud and stealing mares was considered a costly inconvenience by a large cattle operator (I21). Another respondent stated that two or three of his horses were taken by free roaming stallions and than one is with foal from the stallion (I9).

6.9 Carry and Transmit Disease

The majority of respondents did not consider FRH as vectors for disease transmission. Areas of discussion regarding FRH in relation to diseases are presented in Table 6.6. Three respondents mentioned FRH having parasites. Two respondents felt that if FRH get sick they

will die and the disease will disappear with them. Two respondents mentioned swamp fever as potentially infecting FRH and two separate respondents mentioned strangles as another potential disease infecting FRH. Vaccination of domestic horses residing close to FRH herds was discussed as a protective measure against diseases potentially passed on from FRH.

Table 6.6: Respondent Positions on FRH Disease Transmittal

FRH are transmitters or carriers of disease	FRH are not transmitters or carriers of disease
<ul style="list-style-type: none"> -swamp fever -strangles -major carriers of parasites -ring worm -disease cannot be controlled with horses running free 	<ul style="list-style-type: none"> -domestic horses are the carriers of disease and they infect FRH -wild horses do not have worms -FRH die when they are sick and the disease dies with them

6.10 Compete for Grass with Wildlife

Disagreement exists among respondents regarding amount of grazing lands existing. In specific geographical areas FRH were linked to controlling willow, birch, and poplar over-growth by either grazing it or trampling it down (4). FRH grazing or trampling these coniferous bushes and trees led to the belief that there was more grazing land where FRH were located. Once FRH were removed from the land the birch grew and covered access to grass on the land for grazing animals. In other geographical areas, the opinion is that there is more grazing land due to logging (2); this idea was juxtaposed with the opinion that grazing lands have been closed off by birch due to the disappearance of FRH (2).

Interviewees described benefits of FRH as including contributions to the ecosystem and to wildlife by digging through snow and ice in the winter time to expose forage for deer and elk

(6) and grazing together for reasons such as to gain greater predator protection (2). Many respondents described their experiences of observing FRH and wildlife foraging together (7):

The horses protect the elk. We see both elk and deer with the horses. Horses paw and dig the snow away and the elk follow and feed. It is a beneficial relationship. When there were horses at Willow Creek there were more elk because the horses maintained the grassland. The different grazers are beneficial to one another. The elk also bunch in with the horses to keep the wolves away (I6).

One theme that emerged from all Indigenous respondents and two other respondents was that FRH and other wildlife co-exist or complement each other and that competition between the animals does not exist (4):

Horses know the environment. They live it. They are adapted to it. In the wintertime horses know where to camp, where to get water, where to field, where animals are because they go after feed and so does other wildlife. This type of information is what we need to pass on to the next generation (I12).

Another described benefit of FRH grazing habits was that seeds are dispersed through FRH droppings. Furthermore a retired warden familiar with the area articulated that FRH reduce fire hazard through grazing habits. Notzke (2010) also corroborates this point of view:

They'll eat grass that some of the other wildlife won't and I think that keeps the fire hazard down...I have noticed that out in the Panther area there is that thick old grass...the elk and that [other grazers] don't seem to eat it after a while...the horses would eat it in the winter (I1).

One historic experience was described where outfitters' horses in the 1940s and 1950s were not welcome in Jasper and other National Parks because they were viewed as competing with the wildlife (I3). Unlike the benefits described above, some respondents who grazed cattle as well as those connected to forestry and the government, saw associated FRH and wildlife as competitors for forage (Table 6.7). One respondent who grazes large numbers of cattle on the land commented on both the advantages and disadvantages of having FRH on the land (I18). He

acknowledged that FRH overgraze the land (seen as negative) while at the same time help keep elk on the landscape (seen as positive). In opposition to his opinion, three respondents positioned deer and elk as being disadvantaged if FRH were present (3). Two people who described FRH as competing with wildlife also referred to FRH as introduced and as a non-functioning part of the ecosystem:

Feral horses are similar to introduced diseases or weeds because biodiversity evolved here and the feral horses did not. Feral horses add to the species that we have here but should not be necessarily valued in the same way. Wildlife have a hard enough time persisting because of our involvement and use of the land. Feral horses make it even more difficult for wildlife to survive (I16).

Table 6.7: Summary of Comments Regarding FRH Competition for Forage with Wildlife

Competition for forage with wildlife – Positive Positions	Competition for forage with wildlife – Negative Positions
<ul style="list-style-type: none"> -Elk benefit from FRH -FRH are wildlife -FRH have a big solid hoof and dig the snow and ice out so that other wildlife (elk, deer) can also feed -deer and elk follow FRH in the winter -when there is deep snow without horses you will lose your elk -FRH graze or trample the wild birch (Dwarf and Black) and poplar and keep the grazing lands open -when there were FRH there seemed to be a lot more grass -FRH eat poplar -Creator created all things to coexist not to set them up as competition -FRH spread seed through their droppings -There is a lot of room and miles of open land -The horses graze on different forage than deer and elk -Different grazers are beneficial to one another 	<ul style="list-style-type: none"> -Compete with cattle and wildlife -FRH cause erosion -FRH damage regenerating seedlings in forestry -FRH follow feeding habits of elk and this may negatively impact deer and elk (less to feed on) -FRH are an introduced species they did not evolve here -feral horses make it difficult for wildlife to survive -FRH are not a functioning or productive part of the ecosystem -there are literally hundreds of horses in this fringe area and settled area -most FRH in the biggest logged area, trunk road east (We've got it all in this fringe area: horse numbers, game numbers and predators) -FRH numbers are increasing because of massive logging blocks where there is a lot of food

Competition for forage with wildlife – Positive Positions <ul style="list-style-type: none"> -The elk bunch in with the horses to get predation protection (from wolves) -Wolves and cougars hunt FRH -we don't over graze our lease so there's a lot of wildlife along with the horses 	Competition for forage with wildlife – Negative Positions <ul style="list-style-type: none"> -In the 1940s and 1950s FRH that belonged to the outfitters were competing with the sheep ranges and the elk ranges -keep the ecosystems as natural as possible or the FRH could take over -any ungulates (moose, elk, deer) or even omnivores (grizzly bear, black bear); anything that forages or grazes is in competition with FRH
---	--

6.11 FRH Trample Plants

All respondents who provided extensive comments on plant trampling presented the arguments that either FRH trample plants in the same way as other animals (4) or that plant trampling depends on FRH numbers (3). Four respondents identified highways, quads and logging as being much more damaging to plants than FRH.

Several respondents spoke of free roaming horse behaviour in regards to insects such as mosquitoes or flies. One explanation given by a person with a lifetime of frequent and direct experience with FRH spoke of FRH trampling small areas to create a place of refuge from insects:

Cows trample a lot more vegetation and destroy it more than horses do. There's places where they [FRH] get in a stand of timber or something and to fight flies they will trample it down, not to the bare ground, but that's just a little spot. They go there in fly season and fight flies (I2).

Three respondents spoke of paths or trails that free roaming horses create. The first respondent, an advocate for FRH, framed his general position by arguing that industries such as logging, oil and recreational vehicles cause much more damage to the land than trails of horses or other animals. The second respondent's position was complex and framed FRH within a

temporal and historic perspective. Her general response focused on people and horses as part of the land and as an important and contributing part to the environment and ecosystem. The third respondent viewed the horses as a viewing opportunity:

the elk and the moose and the deer that have been there for generations, they have their paths, they have their trails...they follow the trails or they will wander through...for a horse to step on a plant does not do damage, a quad with its wheels spinning or plowing up the land does a lot more damage (I22)

The pack trails are so deep and they are hundreds of years old. I see the trail stamped into the bedrock. This shows how long the horses have been in this part of the country (I6).

I actually like the paths that they make...I use their paths...just to walk...the deer and the moose and the horses go through (I20).

6.12 FRH Negatively Impact Recreational, Spiritual, Private Land

Those who commented on FRH destroying land focused their responses around FRH destroying fences, causing erosion, destroying or grazing on forestry seedlings and “stealing” grass. A cattle grazer with leased grazing rights and a high-end breeder described FRH as destroying fences:

They will bust through fences. I’ve seen these guys crawl over and jump through barbwire fences like they weren’t even there, a domestic horse wouldn’t do that but these guys will. I remember years back my wife’s brother had a trap to catch horses. It was basically about 12 feet high and he lured them in with feed but they climbed out of that, so they are tough animals (I17).

Three respondents thought FRH could destroy fences if horse numbers were large. Erosion was described by an AESRD spokesperson as well as by a warden who had been working in the area since the 1950s. The warden did not see erosion as a problem with the horse numbers as they are today whereas the AESRD spokesperson saw erosion as a contemporary problem:

They do cause a bit of erosion like everything else...but so does when you get too many bison or too many rodents around or too many gophers running around...you got to do something about it. But I don't think we are into that problem here with feral horses anymore (I3)

Horses also create pits because of horse social behavior. In sandy or erodible areas, horses kick up the soil and cause damage. They can cause significant harm on the young trees planted on harvested areas (I16)

The two excerpts below exemplified the ongoing argument between those who view FRH as grazing on regenerated seedlings and those who disagree with that position. One respondent who argued that FRH graze on seedlings also did not believe that FRH are populous enough to cause damage by trampling:

The logging companies they replant, reforest their cut blocks, they say the horses eat their little trees. They don't eat trees (laughs) a moose will eat a willow but he won't eat a spruce or a pine tree, neither do horses (I2).

They will even graze on regenerated or replanted tree seedlings in the winter when they can't get any other forage and that's all that's available because of the snow pack...the timber industry is under obligation from the Forest Reserve Act, I believe, and the regulations that go with it to maintain a certain amount of regeneration and so they have a big problem with the feral horses causing either those plants to be set back or actually die from grazing during the winter. A horse will normally not graze on that, it's not very palatable, but when it is minus 40 and there's a foot and a half of snow and that's all they can get at they'll eat it to survive (I21).

Those with positive responses articulated arguments surrounding spiritual connections (4), viewed damage to the land caused by FRH as similar to that of other wildlife (3), and viewed other human activities as causing more damage than FRH (2). An acreage owner spoke of a spiritual connection to FRH as did Indigenous respondents and two other respondents referred to FRH and Indigenous spiritual connections. One respondent representing WHOAS provided examples on how the group helps mitigate problems with FRH:

Every once in a while the horses will go on to some private land but very seldom. Our group often goes out there if they are having a problem and we'll move the horses for them and we'd even fix the fences if we had to (I22).

When addressing negative impacts on spiritual land the same respondent stated, “spiritual grounds...the natives have such a spiritual belief in animals that I don't think they would consider them destroying it as much as a blessing for them for the animals to make their appearance on the land” (I22). One Indigenous elder and one acreage owner supported his perspective while using similar wording to form their positions. One supporter of FRH summed up negative impacts on the land by stating that, “in order for horses to do that we would need a large population of horses. Unlike in the US, we have predators, harsher climate, Rocky mountains that are a lot rougher and different vegetation” (I14).

6.13 Reported most Severe Problems

Some respondents saw FRH as causing few or no problems and described other problems that they have with moose, bears and cougars. Arguments regarding fences were two sided. One respondent argued FRH damage fences while another respondent argued that many fences are poorly maintained which enables FRH to gain access to private land. One domestic horse owner described “everything” as breaking fences referring to animals as well as to environmental elements. Below I present her practical approach to broken fences:

...everything else breaks the fences too; the trees, the moose. I now build fences only to a certain height because the moose can generally clear them and not catch that hind foot...if you put 4 wire fences up they are too darn high and they keep coming down...it is constant work, every time there's a wind storm...(I19)

Tourism and spiritual connections to FRH were described as the greatest benefits and the need to protect FRH as part of nature was voiced. One respondent stated, “people up here revere the horses” (I6). Likewise an Indigenous elder stated:

The ‘wild’ horses are raised out there, they are well adapted to the terrain. They don’t even need horseshoes. Their hoofs are accustomed to the rocks...there is a spiritual connection. We need to protect free roaming horses, the wild ones...horses are part of nature (I12)

The most severe reported problem FRH cause consisted of: too many studs causing damage because they are aggressive and looking for mares (4), FRH nipping off seedlings (2), a concern for rangeland health (2), FRH competing for graze with elk (1), FRH interfering with domestic horses (1), FRH running into work trucks on the roads (1), and FRH impeding road reclamation efforts (1). The concern of one respondent associated with the forestry industry was that horses trample road reclamation efforts. Despite the damage being initially industrial, the greatest concern the respondent felt was for areas close to water because FRH destabilize road reclamation efforts when they accessed water by trampling new grass growth, thus promoting erosion. Additionally, FRH were believed to impact the reseeding of an area:

[the greatest problem the horses cause] is environmental impact...the seedlings are browsed. Horses may not be the only culprits as ungulates also eat seedlings...the trees are planted in rows and I have observed horse tracks on either side of browsed seedling tips sticking out of the snow as well as horse manure along the path...evidence that horses spend time and are attracted to seeded areas is there (I9).

Conversely, one respondent stated that “forestry is a big industry and there seems to be a lot of prejudice from the forestry against the horses” (I10). In regards to the ranching industry the position that ranchers can’t think of FRH as wild because they do not “make a lot of money” was presented (I14).

Lastly one respondent provided a position that is in line with human-wildlife conflict literature (Madden, 2004; Brook, 2009; Treves, Wallace, Naughton-Treves & Morales, 2009; Hunsberger, 2004; Symanski, 1994) by stating that FRH are not the cause of great problems but that the people fighting among themselves are. FRH, as well as other complex human-wildlife interactions are largely a social problem.

6.14 Predator – Prey Relationships Related to FRH

This section answers the research question on how local people and interest groups classify/frame FRH in relation to the environment. For instance, if people view FRH as a significant prey species that is part of the ecosystem that likely translates into the horses being viewed as wildlife or at least as an important part of the ecosystem (but not always see end of section 6.14.2). On the other hand if respondents view FRH as intruding with other predator-prey relationships they are likely to perceive the horses as an introduced species. How FRH are classified or framed by local people and groups (wild, introduced, stray) is important for decision makers because the information foreshadows which policy decisions (e.g. management methods) are likely to be accepted, disputed or rejected.

Generally there was a lot of discussion, experiences and opinions shared regarding predation on FRH. I emphasize stories describing experiences where predation was witnessed directly or shortly thereafter. Two respondents suggested that unless predation is directly observed “it is hard to say which animal exactly killed them (FRH)” (I8). In the same vein, unobserved predation was also explained differently by another respondent:

There’s one bunch of horses out there that I see every year. There’s six mares in the bunch and there’s a stud and last Spring there was five colts in the bunch and none of them were

there this year. Now it could be that the stud kicked them out cause left to their own devices quite often the studs won't breed their own fillies and they also will kick their stud colts out of their band and so that could have been that or they could have all been killed [by predators]. You know we really don't know that (I10).

Yet another respondent saw missing colts from a band the following way, "often in the wild bands, there may be only one colt in the band and the rest of them were taken by bears or wolves" (I5).

The species of predator were spoken of individually as well as grouped with other predators. Cougars and wolves were grouped together more often than any other predators (9 respondents). Wolves and cougars were unequivocally viewed as potential predators of FRH whereas there was disagreement between respondents on species such as bears preying on FRH.

FRH were described by one respondent as providing protection from predators for deer, and, by another respondent, for elk. FRH were said to protect the ungulates by herding together, feeding in close proximity or by directly chasing wolves away when they were in the vicinity of ungulates that were close to FRH. Photographs were provided as proof of ungulates and FRH grazing together or in close proximity (Feddema-Leonard, 2007, other photos provided by respondents).

6.14.1 Wolves

Seven respondents spoke of wolves preying on FRH. Wolves were most often singled out as the main predator of FRH. One Métis respondent mentioned coyotes in addition to wolves as playing a role in FRH predation. "I wouldn't be surprised if coyotes preyed on them. Coyotes are smart enough to hunt them" (I8). One other respondent spoke of coyotes as scavenging on a horse carcass (I2).

Wolf numbers as well as wolves' historical presence in the area was commented upon.

One retired warden placed stories of wolves preying on FRH within a temporal context.

I remember seeing quite a few bands in this area here, it was called Grave Creek and then Big Horn...There was a lot of them [FRH] at that time there was wolves too and you could see at that time where the wolves had chased them...that was in the early 1960s and we hadn't see many wolves. They kind of reestablished themselves in the Banff area. We never seen many wolves. That was the first time we could hear them howl at night and wild horses you could see where they were chasing them...the tracks. I think they probably preyed on the colts and when you seen the wild horses they were just gone. They were neat [the horses] there I liked them....they'd run [from people]. I think they had some real predator action in there [North Saskatchewan](I1)

Another warden that remembers the area as far back as the 1940s reiterated a similar perspective regarding wolf population numbers, "In the 40s after the war when I started working in the mountains there still wasn't a wolf population like there is now..." (I3).

Four respondents perceived wolves as needing to be managed:

...we are trying to mange the wolves" (I18).

We have been complaining for 15 years about wolves and cougars. There is no game out there...Horses are doing better than the game. The horses are very healthy" (I8).

...the trappers are doing a good job of keeping the wolves where their level should be and the government is happy with what the trappers are doing" (I10).

The wolves are pretty hard on the colts...they are hard on everything" (I3).

Wilmot & Rutherford (2005) found that negative attitudes toward wolves are salient and resistant to change in some rural populations and the comments made above indirectly add support to those findings.

6.14.2 *Wolf Predation*

One conservation-minded respondent spoke of FRH occasionally getting stuck in marshes and then being preyed upon by wolves (I13). The following story by a respondent involved in a large ranching operation describes a direct experience with a FR horse being preyed upon by wolves.

I have seen a two year old little stud, like a bachelor stud that people had stopped and they were panicking because they thought one of my horses was being attacked by wolves. When I went down the road what I found was this two year old standing there that had been...large pieces of his hind quarter were missing from a pack of wolves...broad daylight in March. He was standing at this point unable to move, standing there, the wolves had left by this time. By the time I came back that evening they knew enough to know that it was a pack of wolves 'cause coyotes can't possibly do that and I took pictures. I have pictures on my phone somewhere of pieces the size of about 15 to 20 pound roast that were missing out of his hind quarter on both sides. That pack would have come back later on because they knew exactly where he was. I went to look for him later on to see if there was anything that I could do in terms of just fixing that problem for him and he was gone (I21).

Wolf predation on FRH was generally accepted as prevalent by most respondents (15). The majority of respondents mentioned some form of wolf predation on FRH, however, viewing wolves as predators that feed on FRH was not always congruent with viewing FRH as wild game for the wolves or as FRH necessarily being part of the ecosystem. One long time local resident and cattle grazer stated the following: "Depending if the predation is on the horses then the moose population will be up because moose are generally what your wolves go after..." (I18). My understanding was that the respondent was indicating that FRH may interfere with the local predator-prey balance.

6.14.3 Grizzly Bears

Respondents were divided on predation on FRH by grizzly bears. Two respondents spoke of evidence that grizzlies were preying on FRH. This one particular description concerned a domestic horse,

Two years ago...he had all the hide on one hip tore off which would have to have been a grizzly with the way the claw marks were. He was just lucky he was able to keep moving and get away but there have been lots of grizzly kill on young elk and young horses out there and cougar because there's lots of cougar out there (I10).

Another respondent who was a guide and outfitter as well as a warden in the area recalled the following from the late 1940s,

...in 1947 another fella and I was holding horses for the early hunting trips and we had enough horses there for three hunting trips. I suppose we had 60 head and we were there only a day or two. There was a dead horse lying out there, it got in an accident, anyway it was dead. I counted 17 or 18 grizzly bears around that dead horse (I3).

Respondents who were able to compare across a temporal timeline, because of long term experience in the area, often spoke of changes in animal populations. The recollections included changes and movement of FRH populations. General environmental changes to the area such as those brought on by logging practices were also discussed. Two respondents spoke of the area as more open due to logging and there being more prey, including FRH, and predators as a result: "more forage and rains than we've ever had for a number of years until it's reforested. There's lots of rain and lots of grazing area and with that increasing horse numbers...we are going to have lots of predators and we are going to have lots of deer" (I18). On the other hand, the long term resident quoted below saw an increase in timber and brush cover and shared this second hand story about a cougar attack on a FRH:

the timber wasn't as grew up as it is now and across the river there's one tree. One big tree right in this meadow and a bunch of the horses were there and he [a friend] was watching

through the glasses to see to figure out which horses they were, they were roaming horses. This one young colt he got close under this tree and a cougar jumped out of that tree and got that colt. Two weeks later it got a yearling colt from the same tree. And you find bones from some that have been killed, you don't know for sure what done it because it is all cleaned up by the time you find it. I know that they get some but I couldn't prove or if it was anything else (I2).

Three other respondents spoke of grizzly bear predation on FRH as unusual unless the horses were sick, weak or young (small). "...[bears prey on] a very young or injured horse but usually it's when the horse has succumbed to other injuries like when it's down and can't get up" (I22). Several other respondents spoke of predation primarily occurring on colts, young, sick, hurt or old FRH.

6.14.4 Cougars and Wolves

Cougars and wolves were most often cited as preying on FRH (9 respondents). "Cougars and wolves feed on the horses. I have witnessed them preying on them. They go after unhealthy ones and after colts. Further west one was killed by cougars and one attacked by a cougar. I have seen at least a dozen killed by wolves" (I23). Two respondents singled out cougars as the main predators of FRH. One respondent spoke of cougars preying on his cattle, "in my own corral a cougar ate my own calf" (I7).

As mentioned previously (section 6.14.2), several respondents viewed FRH as prey for predators but not necessarily as a part of the ecosystem. "Besides cougars and wolves there is nothing to keep them [FRH] in check" (I8). On the other hand, one Indigenous respondent and two respondents connected to WHOAS described FRH as part of the ecosystem.

...I saw a picture of two horses grazing and there's a wolf just wandering through and the horses aren't even looking at it. They do manage to coexist and to figure out their own

hierarchy not just amongst their own breed but in the whole wild as far as I've noticed (I15).

They belong there and they complete each other...they eat grass and the bears eat them (I14).

...they not only add to the biodiversity they also add to the food chain for predators (I22)

One respondent tied to the cattle industry viewed predation on FRH as relieving pressure on predation of livestock. "They are a food source for some of the predators out there... for wolf and cougars especially so what that will do is help some of the predation that is happening on our livestock" (I21). If predation on FRH helps turn away predators from livestock, horses will likely be encouraged to remain by local cattle grazers, however, if FRH are attracting more predators to cattle grazing lands this will have potentially serious implications for future management of FRH.

Those respondents who value the ecological role of FRH might find the IUCN concept of 'ecological replacement' useful because it could be used to support FRH on the landscape. Although FRH were 'accidentally' reintroduced to Alberta they could be argued to perform a specific ecological function. Ecological replacement using FRH could be based on this IUCN criteria, "lost through extinction, and will often involve the most suitable existing subspecies, or a close relative of the extinct species within the same genus" (p. 12).

Chapter 7 discusses respondent positionality on human management options toward FRH. I asked respondents for their own thoughts on managing FRH as well as to evaluate management options that I presented. Chapter 7 is organized similarly to this chapter.

CHAPTER 7: RESULTS AND ANALYSIS-FRH MANAGEMENT

This chapter focuses on several research questions and explicitly answers how local respondents or interest groups view FRH management methods. This is practical information for government because it outlines which management methods are unacceptable, acceptable or receive a mixed reception from local respondents and interest groups. Another research question addressing how local groups and individuals vary in their acceptance levels toward FRH management methods is answered in this chapter. Research questions on how local cultures interact with FRH and meso-level (group) discourses regarding management of FRH are addressed.

According to the tenets of transdisciplinarity and situational analysis, lay knowledge is significant, thus, in light of colloquialism I used google dictionary (n.d.) to define management as, “the process of dealing with or controlling things or people”. The word ‘management’ is entrenched in ‘Western’ ideology and represents a particular worldview. Due to historic and ongoing inequalities the definition above may be politically loaded for Indigenous, Métis and other marginalized groups. I use ‘management’ in a broad way, ranging from aggressive human intervention to stewardship and including no intervention. Animal management could be positioned on a spectrum involving many definitions from aggressive, hands-on management to passive, hands-off management, a range that I have included in my questionnaire. In addition ‘management’ may be understood differently due to various cultural worldviews that may position the term differently, given these differences I provide detailed quotations that explain individual positions. I start with a general overview of positions on management methods that leads into thorough descriptions of respondent positions.

7.1 Grouped Responses to Management

Section 7.1 answers the research question on meso-level (grouped) discourses regarding management methods regarding FRH because they present grouped discourses on how people respond to management of FRH. This type of inquiry is important because it adds dimensionality to decision making by helping to fill knowledge gaps. Recognizing and incorporating interconnected dimensions is a necessary component of creating successful policy addressing wicked problems.

Table 7.1 illustrates the answers in a binary way to specific management methods given by respondents. The table is simplistic and leads into a more informative discussion of respondent positions later in this chapter. Despite respondents being grouped together based on positions that were similar, no group of respondents (handlers, government etc.) fully agreed among themselves on all the management options presented (Table 7.2). This speaks to the diversity of the respondents and to a corresponding diversity of their opinions regarding management of FRH. These diverse views may be representative of geographic and economic differences between respondents.

Table 7.1: Agreement and Disagreement to Selected Management Techniques

	Poisoning	Aerial Shooting	Birth Control	Parks and Special places	Using Barriers	Trapping	Rounding up and selling FRH
Disagree	20	18	12	10	9	5	1
Agree	0	2	7	10	11	15	19

Qualifiers such as ‘yes I agree, but only if...’ and ‘I disagree if or because...’ were given and included in this table.

Perceived or real damage FRH may cause, and the necessary action or management needed to mitigate the damage, depends on perceived and real economic factors and on the local social and physical geography of the area. Geographically, for instance, respondents who lived in areas where higher land use pressures existed spoke of the importance of controlling FRH numbers. Similarly, the responses of two grazing lease owners (one retired and not using her allocated grazing lease, the other heavily dependent on use of his lease for his livelihood) demonstrated the difference that individuals' economic situations may have on perceptions of FRH. The retired respondent welcomed and enjoyed FRH on her grazing lease whereas the heavily used grazing lease respondent felt FRH were at their maximum. Socially and culturally, respondents involved with the WWF spoke of FRH as culturally important.

All respondents viewed poisoning as unacceptable. Given the large variety of people and perspectives involved in this study, the strong unwavering opposition to poisoning points to an important management decision criterion. Most respondents also disagreed with aerial shooting as a management option. Two respondents saw shooting as a management option only if all other acceptable management options failed. Rounding up FRH and selling them was the most agreed upon management option (with two WHOAS respondents who disagreed). The management option of creating parks and special places for FRH received an equal number of responses.

In Table 7.2 I use the same criteria to group respondents as earlier when addressing reported problems with FRH (Section 6.1; detailed criteria on grouping respondents in Table 6.1). Responses of grouped respondents indicate simplified agreement or disagreement with specific management techniques (Table 7.2). This section partly helps answer my research

question on identifying acceptable management options to local people and partially the subsequent research question explaining why local people vary in acceptance levels toward FRH.

A former warden and outfitter (handler), a former FRH permit patrolman (handler) and a self proclaimed local researcher (local research) were all proponents of FRH. All three of the respondents disagreed with aerial shooting, poisoning, using barriers or birth control methods, but agreed with trapping, rounding up and selling horses, and creating parks and special areas for FRH. All three respondents had significant experience with FRH in the area and were male, middle aged and older.

Surprisingly to me, a high-end breeder positioned against FRH and an acreage owner in favour of FRH agreed on all options regarding FRH management. Both respondents disagreed with aerial shooting and poisoning, as well as with birth control methods. Both agreed with trapping, using barriers, rounding up FRH and selling them and with creating parks and special areas for FRH. The two respondents appear to be unacquainted with one another. Even though they agreed on management techniques, their views about problems and FRH population numbers were almost diametrically opposed.

The spokesperson for Alberta Beef and a Grand Cache writer and representative for the WWF responded similarly in regard to management techniques that they supported and opposed. Aerial shooting, poisoning, birth control methods, and the creation of parks were opposed whereas trapping, using barriers and rounding up horses and selling them were supported.

One business oriented respondent managing a large commercial cattle operation and dude ranch as well as one backcountry quarter horse breeder and rancher gave similar answers to the management options I presented. Both disagreed with aerial shooting, poisoning, using barriers,

birth control methods and creating parks and special areas for the horses. Both respondents agreed with trapping and rounding up FRH and selling them. One respondent had suggested I interview the other so their agreement may have been a result of previous discussions and shared perspectives toward FRH.

No respondents answered questions in completely opposition of one another. All respondents disagreed with poisoning and most disagreed with aerial shooting. The most agreement was on trapping FRH in various ways and rounding up and selling FRH. Trapping and rounding up horses is one example of the challenge of complexity and understanding of what is going on. People associated with the WWF for instance, use captured horses for cultural purposes whereas those grazing cattle are concerned about FRH numbers on their grazing leases. How people see management generally, and agreement, disagreement, and mixed positions toward specific management techniques are an important beginning for future policy development.

Table 7.2: Grouped Responses to Specific Management Techniques

Grouped Respondents	Aerial Shooting	Poisoning	Trapping	Using Barriers	Birth Control Methods	Parks and Special areas	Rounding up and selling horses
Horse Handlers	No	No	Yes	No	No	Disagree	Maybe
Government *	No	No	No	Yes	No	No	Yes
Local Independent Research	No	No	No	Maybe	No	Yes	Yes
Breeder*	No	No	Yes	Yes	No	Yes	Yes
Indigenous*	Yes	No	No	Yes	Yes	Yes	Yes
WHOAS	No	No	No	Disagree	Yes	Yes	Disagree
FRH Observers	No	No	Disagree	Yes	Disagree	Yes	Yes
WWF*	No	No	Yes	Yes	No	No	Yes
Métis*	No	No	Yes	No	No	No	Yes
Competition	No	No	Yes	No	Yes	Disagree	Disagree
Business and Industry	Disagree	No	Yes	Disagree	Disagree	No	Yes
Cattle Grazers	No	No	Yes	Yes	Disagree	No	Yes
Total	No=10 Yes=1 Disagree=1	No=12 Yes=0 Disagree=0	No=4 Yes=7 Disagree=1	No=3 Yes=6 Disagree=2 Maybe=1	No=6 Yes=3 Disagree=3	No=5 Yes=5 Disagree=2	No=0 Yes=9 Disagree=2 Maybe=1

Results are based only on those respondents who answered questions. Yes=all respondents in the category agree with the statement, No=all respondents in the category disagree with the statement, Maybe=all respondents think the statement is a possibility, Disagree=respondents disagree amongst themselves. *While only one respondent chose to answer I have included their responses to represent the range of perspectives. I am using this to illustrate the range of responses and perspectives in decisions. The variation is not representative but illustrative.

Sections 7.2-7.9 provide further discourse on management of FRH and explicitly answer my research question on what local people view as acceptable management options. Sections 7.9.1-7.9.10 provide useful insight into acceptable management options because respondents predominantly led the discussion.

7.2 Aerial Shooting

Generally, shooting was a management option the majority of respondents disagreed with. Three respondents did suggest that shooting FRH might be an option in order to control the population when other options did not seem to work and FRH numbers became too high. One Indigenous respondent stated, “well if they are going to thin the herds for a good reason. I agree with that [shooting] but not somebody going and just killing the horses for fun or for sport. That I don’t agree with” (I4). Another respondent with a generally antagonistic position toward FRH suggested a population number of 200 with shooting as an option to keep the numbers low.

When management is not working I would support extreme measures such as shooting. The population target should be around 200. The question is: how do we get rid of the rest that are out there? How do we keep the population in place? Shooting may be an option. Trapping, pulling horses out of the forest. Is that effective? Sterilization (I9).

Two respondents stated that managing FRH populations before “they get too out of control” would be best and then shooting would not have to be an option. Several respondents stated that something would have to be done if numbers became too high. Three respondents considered it important to use horses for meat rather than letting the meat go to waste. The Métis respondent articulated (first quote, following; and in additional conversation with me) that he is

not opposed to shooting but that he is opposed to wasting horse meat (unless the animal is a wolf and then wasting the meat is acceptable):

Implement policy such as trapping. When branded horses are caught give them back for a fee. They could be caught and broken and then make good horses out of them. I am not opposed to shooting horses. In the Fall Europeans could shoot the horses for meat. I do not support shooting anything and letting it go to waste...unless it is bait used to kill wolves (I8).

Don't let it [horse numbers] get that out of hand. This is extreme. Prior to that drastic measure manage them. Give out permits to control the numbers. If some of the horses are taken to the slaughterhouse at least they are used. It is always a struggle for balance between the extremes [saving all the horses and getting rid of all the horses]. The deer populations are so large that they are going into towns but the animal rights people are against controlling their numbers. Just like Canmore has the rabbit issue. Need to find a balance. The management let it get too far and someone has to face the responsibility (I7).

The third respondent spoke against shooting FRH from a different angle by suggesting that FRH are a resource. He is also an advocate for range health, landowners with grazing allotments and for those who graze cattle on the land:

no [shooting] because I think it is a waste of a resource. I look at them [horses] as a resource, as a resource that needs to be managed properly. By having a higher capture ratio on a given area, by allowing those people that are responsible for range health and range management, by allowing those people to have more latitude in decision making in as to what needs to happen with the feral horses within their realm of responsibility or influence, like on our grazing allotment. So being able to catch those horses and sell them as potentially a western pleasure horse, saddle horse or also to sell them as a protein source, as meat that would go into a feedlot situation so that resource is being utilized...They [range health people] certainly do have a lot of say I think as part of Alberta government because they are the landowners and they are also the ones that have to enforce the Act and the regulations. So I think interdepartmentally they have quite a bit of say it is just that they don't have a specific act that these fall under. The stray animals act is the only one right? (I21)

In addition, a respondent of Métis descent suggested shooting bad studs like they do in Australia, "the studs could be trapped or shot. They are ugly and small. The studs are short

brown or black...dark, the manes are dark and their tails are really long” (I8). Several respondents (3) considered that studs cause problems and because they are unattractive and not as important as mares more males should be removed than females. As mentioned earlier, in the section discussing biology (section 3.1.5), young ‘teen aged’ studs form groups and cause trouble, fight older established stallions, as well as try to steal mares, sometimes domestic, to form their own harems. At least part of the explanation for negative opinions toward male FRHs lies with the problems young male horses cause for local people as well as for established FRH harems. One WHOAS member made the following statement: “the studs are what actually can cause more problems than anything out there (I10)”. An extension of the views of the same people consisted of suggestions to focus on management of stallions (I18; I19; I2). The three studs to one mare capture ratio previously supported by the government also displays the (perceived) need to reduce male FRH numbers. Controlling young male numbers was considered more important than controlling numbers of mares and established stallions

One supporter of FRH spoke out against shooting horses from an airplane calling it cruel, inhumane and ludicrous. Along the same lines another respondent said:

I am glad that there is action being taken [on humane management] because...I have heard in the old days they just shot them and if there’s too many they just shortened up the herd by disposing of them and that’s what they did...I’m glad now there’s enough pressure...that they are not doing that....that part I am glad to see (I11)

7.3 Poisoning

While most respondents did not comment on this option at length, two comments are noted in (Table 7.3). The answer frequently given to the question on poisoning was simply “no”. Respondents from various backgrounds and with varying levels of experience with FRH all

stated that poisoning should not be a management option. This type of broad agreement suggests considerable opposition to using poison as a control method that is not used by AESRD to control horse populations. Poison is an acceptable management method used publicly and privately for animals such as the Richardson's ground squirrel in Alberta but is not method used on FRH.

Table 7.3: Respondent Positions Toward Using Poison as a Management Tool

Poisoning
totally unacceptable...you'd be poisoning other things too...why would you poison anyway? (I1)
the poisoning of any animal is cruel and inhumane (I22)

7.4 Trapping

I presented respondents with trapping as a management option and asked them to comment. Seven respondents provided detailed explanations of why snaring was unacceptable, “not leg snares, corrals. No leg snares. As a rancher...just a person who, from an animal husbandry point of view, that's just not wise...it's not fair...it is not ever how I would treat my animals” (I21).

Descriptions of snaring included leg snares, neck snares and snaring horses with a rope off of another horse. The respondent representing mountain people agreed with leg snaring a horse only if the person doing the snaring ‘knew what they were doing’. Along the same lines three respondents agreed with roping a FRH (putting a rope around the neck to catch the horse) only if those catching the horses were knowledgeable and experienced in roping horses. One Indigenous respondent was opposed to trapping but he supported corralling FRH if the horses

were trained as riding horses or for meat to consume by “French men” (I4). Similarly, a Métis respondent stated:

There are traps out there...last Fall...at Jock Lake I saw a horse trap lure them in with salt...they have to be controlled somehow...I don't think we should shoot them or chase them...if they are caught and taken to market I might not be opposed....I don't know...Europeans were butchering our horses and they went for meat 25 years ago...they were meat buyers...they bought tons of horses...not good horses...I had bought some caught horses and I traded them but I never caught them myself....corrals with salt used for bait and gates...this is very humane. Snares are often not checked enough and things get caught that should not get caught and die (I8)

Another respondent also commented that while it was humane to process horse meat on the land, the act of snaring was inhumane: “[trap] in pens not leg snaring...it has to be humane...could process the animals [horses] right there...there's lots of places in the world that want the meat...just don't shoot and leave the meat there” (I23). Based on the positions presented by respondents there are many interpretations of what constitutes humane trapping. Local involvement on developing clear guidelines for humane trapping could provide a democratic opportunity for policy creation. Due to cultural differences, definitions on humane trapping of FRH would vary across Alberta but locally developed and implemented policy could result in broader acceptance of policy (see recommendations in section 6.4).

Comments in support of snaring were provided, in part, by those who described FRH as a way of life for specific socio-cultural populations. Definitions of ‘those who knew what they were doing’ consisted of people with a lot of experience and who lived, worked and handled FRH frequently and as a way of life. Experience and skill in horse capture was considered important:

corral with a permit...yeah I support that...no leg snares...I support roping but provided that the individual that's going to do the roping knows what they are doing...if you don't know, and it's just somebody that all of a sudden thinks that he's a

cowboy and wants to go out there for a glory ride well he could easily get hurt...but on the other hand you take a guy like Jimmy Kelts and there's one guy I know who does it and he's a pick up man all summer long, I mean that's his business and so he knows how to rope and he don't have to choke them down and just checks them and checks them and checks them and the horse learns right away quick that when he gives the rope comes loose...it doesn't take him very long and when he's doing that in front on the public eye so he's open to all the criticism in the world but a guy like that he can handle it even a wild horse because he knows when to back off and his horse is capable of doing that for him (I10)

One respondent from the WWF spoke from the experience of training FRH:

leg snares...depends, once you get a wild horse they are useful and amazing...the people who have experience with them here can turn horses into valuable assets...the FRH are better than spoiled acreage horses...right now we are working with 18 unbroke horses...we have 6 men and helpers, 18 people all together...we train the horses and then we can sell them...this will all happen in June and we have 10 days to do it...when you train wild horses they have not been taught bad manners (I6).

Another respondent also spoke of FRH that he acquired as a result of capture by snaring:

[Snares] around their neck, head and sometimes their legs too but I know that some of the ones that I got from the Bighorn Reserve...they set snares in trees and then they ran into them...well if the rope wasn't set right it could choke them yeah...but if they had the rope set so that it wouldn't be tight enough to kill them...a lot of guys in the winter would rope them off another horse and that worked too (I5).

One respondent did not agree with chasing FRH while another thought chasing FRH could almost be considered a sport. Seven respondents suggested corralling FRH as a preferred method of capture. One respondent articulated that chasing a horse to trap it could cause unwanted separation between a mare and a colt:

I guess probably what they are talking about is putting hay in a trap and trigger it and that sort of thing. We use that for elk a lot for relocating them. I don't think I like that. I know we set up traps and we tried to chase them into it but when you get this sort of situation where you are baiting them and trapping them I think you end up doing a lot of separation getting a mare on one side and a colt on the other (I1).

7.5 Rounding up and Selling Horses

As the section above demonstrates, to some respondents the humane treatment of FRH during capture takes precedence when expressing their opinion while others emphasize using horse meat for consumption once caught to minimize waste. Others completely oppose FRH being used as a meat source; for instance, one respondent suggested that ultimately the horses should just be left alone and was in opposition to any form of capture. Other respondents supported traps under a variety of ‘humane’ conditions, while still others spoke of capturing FRH as a meat source.

Regarding FRH being caught and sold as riding horses, an acreage resident commented:

I think that’s one of the ways of doing it [rounding up and selling] as long as it’s done humanely and with an end in sight and not for food, not packing them...I think they are really resilient horses and they probably make really good pack animals but having been through what I have been through with my little draft horse...to have an argument with her is not a good idea and if you don’t get them young enough I don’t think you could take a three year old and turn them into a useful, a humanly useful, animal that’s just really hard (I20).

Corralling methods and types of corrals were described. Metal corrals were considered easier to transport and to dismantle while wood corrals were described as more permanent structures. WHOAS described corrals in terms of a safety risk for FRH in their Horse Capture Regulation Review (2004):

Currently, catch pens, which are typically metal are often constructed for temporary use and could introduce a higher safety risk than would be encountered with more permanent, wood rail fences. A suggestion here is that permanent wood pens be constructed so that wild horses are less likely to be injured by the unforgiving nature of metal and the collapse of pens during capture times. Since wild animals are highly susceptible to being unable to find their way out of pens when gates are left open, it is recommended that gates are closed at all times when the pens are not in use and that the closing of gates be monitored (p. 7).

One respondent wanted all corral structures dismantled when not in use even if the person using the corral had a grazing lease on the same land (I8).

One respondent mentioned chasing FRH and the difficulty of catching them without drift fences. Luring FRH into corrals was described as achieved by strategically placing feed and salt blocks inside with a trip gate that released the gate to trap horses inside. Three WHOAS respondents described chasing FRH as inhumane while a former warden considered it an enjoyable activity:

It's probably a weekend thing where somebody goes out and tries to catch a horse...there may be a few seriously doing it but they are not going to make any money off of it...it's almost like a sport...if racing horses is the sport of kings, then chasing horses is the king of sports (I1)

Respondents who were linked to generational experience with FRH, as well as to the preservation of traditional skills and to old knowledge of FRH (mountain people), generally supported experienced people roping FRH. WHOAS respondents' discourse strongly opposed roping and chasing by stating that:

Another major issue WHOAS has is with the running and roping of wild free-roaming horses as a method of capture. No matter how experienced a wrangler is, the danger of injury to the wrangler's horse and especially the wild horse is real. The capture season takes place at a time of year when the conditions are very unfavourable and unsafe. With snow cover, obstacles and ice are hidden. A wild horse fighting the rope, or even just being run hard is in very imminent danger of being injured. This is inhumane and this method of capture should be banned (WHOAS, 2004, p. 7).

Within the WHOAS organization itself, one member expressed agreement with experienced horse people chasing and roping FRH:

...I support roping but provided that the individual that's going to do the roping knows what they are doing. Some of them guys can go out there and rope and they don't hurt

anything but if you don't then I wouldn't support it. I think that when they sell the permit that's part of the responsibility of checking them out...(I10).

7.6 Using Barriers such as Fences to Contain Horses

The creation of fences and partitioning of the land is part of a contentious history of the study area. Historically horses were set to pasture and gathered again when needed. Outfitters and wardens for example would release their horses in the Winter and then gather them up when they were needed again in the Spring or Summer. An Indigenous elder described the same practice currently taking place on the Reservation. Hundreds of his of horses are released onto the land to graze and be caught when needed. The horses that he currently trains or is working with are kept close, fed, given water and tended to, but the others are free to roam the land.

There's very little management and up-keep...like I say, I never feed my horses except for the ones that are broke and sometimes we do feed them if we have them in the pasture and we do castrate the studs, brand them and of course breaking and training (I4).

Another respondent spoke about the worldview of Indigenous people that supports horses to roam freely. Historically, settlers, outfitters, wardens and others managed their horses similarly. The creation of fences caused friction between this traditional practice and the way that domesticated horses are currently kept. Several respondents, especially those tied to traditional ways of keeping horses, spoke out against fences. At the same time a high-end breeder perceived the traditional release and capture practice negatively, "Around here the issue is really the horses that come off of the reserve. There's a lot of horses on that reserve. A large percentage have never even had a halter on them" (I17).

Another argument against fences was that they are not maintained and that FRH easily find their way around or over them. The argument went both ways, some described FRH as

easily jumping over fences while others spoke of high 'elk' fences as restricting FRH movement. Another Indigenous respondent also spoke of the artificial boundaries that we create for wildlife and for the horses and that many of the problems are due to the lack of balance that we have created (I12). A retired warden also spoke of fences as being restrictive to wildlife (see Table 7.4). The cost of maintaining and constructing fences was a concern (2 respondents), as was whether the space was large enough for FRH; or the general availability of space and policing of fences and the area were also discussed. Fencing the horses out rather than fencing the horses in was also suggested if the horses were treated equally to wildlife. I divided the arguments in Table 7.4 into categories of opposition and support but some positions are not easily categorized into one or the other. For example, the second quotation in support of fences questions having large areas of fence maintenance while at the same time suggesting that the fences could be used to keep the horses off the highways. The same respondent was skeptical of fencing being used as a method to keep the horses out of lease grazing lands. He stated that if wildlife are permitted on leased land the same should apply to FRH.

Table 7.4: Support and Opposition to Using Fences as FRH Management Tools

Arguments in opposition to fences	Arguments in support of fences
<p>“I would not agree with that. I just think it creates another paddock somewhere...it would affect all the wildlife...too restrictive” (I1).</p> <p>“because you can’t do it it’s impossible....they can’t spend money to hire one guy to police it how would you spend money for that” (I2).</p> <p>“no more fences. There are enough fences” (I8).</p> <p>“if you had a lot of money you could do that” (I21).</p> <p>“no I think that there is a fence along the forest reserve and as long as it is maintained the horses should be allowed to move where ever they feel free...the same as the elk and moose and the deer...generally they will manage their own areas that they will stay in”(I22).</p>	<p>“have you seen what they are doing around this area towards Banff with all the animals with all the big roads and the big tunnels?...they can do that for the horses...they wouldn’t get over an elk fence there’s no way” (I15).</p> <p>“this is a matter of taking care of the fences...this is a huge area to fence the ‘horses in’ so we should fence the ‘horses out’...the highway fences have worked for keeping the elk off the roads for example...is it legal for ranchers to fence elk out of the lease grazing land?...I’m not sure but if the elk can’t be fenced out then neither should the wild horses” (I14).</p> <p>“well I think that’s ok as long as it’s a big enough area...you can’t just have 20 acres you can’t do that” (I20).</p> <p>“I believe in good fences makes good neighbours. I run into this guy on the reserve and he’s not a really good neighbour...he doesn’t repair his fence and he wouldn’t let us repair it” (I4).</p>

7.7 Implement Birth Control Methods

Respondents that were in opposing camps about this management option felt that implementing birth control methods would be too expensive and difficult to implement (3). One of the respondents, a proponent of FRH stated the following:

This [birth control] is not needed here...it cost about \$4-5 per shot per year last time I asked...this would be expensive...would have to keep records, ear tags...it would be harder here and more expensive...this method would stress some horses to death but this is not an issue in Canada because the numbers aren’t big enough...the government is

afraid...and doesn't want to haul feed out there...we need to see the horses as wild animals (I14).

Environmental differences between Alberta and other areas where birth control is used on free roaming horses was articulated by WHOAS:

I guess it has been used successfully in the United States...it would be a lot harder in our foothills as they exist...if it could be done we would be willing to do that too because it would be humane and it would be a practical way of assuring that the horses don't become their own worst enemies. In Australia and the United States the horses don't have predators so they just roam, our environment up here is so harsh and so different and we got so many things going against the horses that it is totally different (I22).

Three respondents spoke of young males to be 'gelded' or 'castrated':

If they control the studs that would be ok...the ones without bands of mares... well I guess you could geld the stallions that would cut down on the birth rate...the problem they have there [US] is they have thousands of horses being turned out that they can't slaughter anymore and they can't ship and they have a hell of a problem with that...they are shipping some to Canada, they are not supposed to but they do (I11).

Several respondents spoke of horses being shipped to Canada for meat processing because of regulations prohibiting horse slaughter in the United States. All respondents who spoke of the regulation spoke in favour of horse processing plants even if they were proponents of FRH.

Concerns that were mentioned included that implementing birth control methods might change FRH behaviour, stress the horses to death and threaten their wildness:

it might change their behaviour...if you started gelding, for example, that would just totally change the dynamics and they wouldn't really be wild then...so I don't know if that would work or not...I haven't thought about that (I15).

7.8 Develop Parks/Areas where Horses can Live

The majority of respondents (8) who provided in depth statements regarding FRH and parks agreed that the horses should remain together with wildlife on crown land, but that separate

horse parks are not necessary; current areas where land is shared among wildlife, horses (and in some cases, people) is most acceptable. One respondent emphasized the importance of policing a 'horse park' while another emphasized the exorbitant expense of managing such an endeavour. Three respondents linked to WHOAS described creating an area where the public could be educated on FRH, to train and find homes for specific horses, and where problem horses could be dealt with.

We'd like to get a program going where if they want to trap, they trap some of the younger horses and we would like to develop some situation where we could maybe work with the younger horses and find a home for them rather than just have these horses taken out of there, later-on, when they are older and just shipped to the canner...down the road they might end up in the can but somebody might have 10 or 15 or 20 good years use out of them rather than just take them from the wild and put them in the meat department (I10).

Responses to this management option were of three types: a) no special horse parks are needed because horses and wildlife should share land as they do now:

I will say that the way they are now is a special area...I don't know that you could single it out and say that it is just for horses because that wouldn't be right because there's other wild animals or whatever out there (I11).

b) money and policing concerns:

that would be ok if they could police it because we could do the whole thing out here but people are in there and they are running their quads and everything else...you'd have to police it very strongly and have quite stiff penalties...(I2), and

c) providing parks so that horses could be left alone to live without harassment:

We need more parks but why should there be a horse park? How about a bear park? The animals need areas for all of them together. There already exist catch areas, SRD permit areas, that could be used for both management and protection. There is no need for a sanctuary we already have these things that we could use in place. A simple rewrite of the legislation is all that is needed (I14).

one of our first mandates and one of our first objectives was always to have an area set aside same as they do in the United States, was a wild horse reserve. It would be an area

where the horses could be and that they are just allowed to live without harassment...not fenced (I22).

7.9 Further Themes Related to Management

Six themes emerged from the conversations regarding management of the feral, wild or other states of FRH. I have organized the themes starting with passive management perspectives and moving to more human involved management perspectives. I conclude the section with presenting respondent perspectives on legislation, permits, suggested workshops and further management suggestions.

7.9.1 Leave FRH Alone

Seven of the respondents mentioned leaving FRH alone. One respondent referred to protecting the area with fences to keep FRH off the roads to give them more freedom to be a part of nature (I15). Another respondent suggested leaving FRH alone and tied to tourism to emphasize that observing FRH is a unique opportunity (I11).

One backcountry rancher and horse breeder stated that he would maintain the herds as they are unless there are areas where they are too dense, “for us that’s not a problem...maintain as they are and leave them as they are” (I5). One respondent who was a warden and outfitter and had been working in the area since the 1940s stated, “I think all we can do is leave these things alone. Get rid of the quads and keep the habitat” (I3). He consistently spoke about the importance of protecting and maintaining habitat for wildlife instead of focusing on protecting individual animals. His argument was that without habitat and space, vulnerable species would

not survive or thrive. He emphasized protecting the habitat as well as wildlife and FRH needing space.

7.9.2 *FRH are Wildlife*

FRH were perceived to be the same as wildlife by some respondents; this theme is also demonstrated in the section on predator-prey relationships. Two Indigenous respondents from two different reserves stated that FRH are part of the ecosystem. One Indigenous respondent made the connection of FRH being synonymous to wildlife by speaking of FRH as dying naturally because they are part of the ecosystem. The other Indigenous respondent spoke of treating FRH the same as wildlife where hunting would be acceptable when their numbers get too high. Another long time resident who was a warden with cattle grazing experience stated, “I think they should just keep managing them as they do any other wildlife... They are just part of that whole management and accepted as part of that wilderness” (I1). The Alberta government expressed concern over FRH being grouped as wild animals, “feral horses are not designated as wildlife and are not managed as such because that could lead to management options such as hunting and that would be controversial” (I16).

Eight respondents explicitly supported using FRH as a meat source. Seven of those eight respondents considered meat packing plants as playing some kind of a role in FRH management. The respondent involved in forestry stated the following:

I would support any management from shooting to sterilization. People from France and Germany like horse meat so if there is a market for it we could be catering to that market [*same as both Indigenous respondents*]. I would support hunting permits for this type of management (I9).

7.9.3 FRH should Remain on the Landscape

Arguments supporting FRH on the landscape included cultural linkages to FRH, to the area and to the people. One outfitter and forestry worker who had been in the area since the 1950s stated that FRH are part of the history of the area similar to trapping and trappers, “FRH and traditional activities such as trapping are part of the ‘heritage’ of the place” (I23). Another proponent of FRH spoke of different levels of wild in FRH. She described some FRH as recently released domestic stock (thus, not wild). She went on to explain that horses born in the wild or after several generations that are unafraid of people are semi-wild. The truly wild horses, from her perspective, avoid human contact, have been on the landscape for many generations and behave similarly to wild animals she believes these are the wild horses in need of the highest level of protection. She went on to describe wild horses as heritage animals that maintain cultural linkages between people and the environment (I13).

7.9.4 Breeding Stock

Three respondents spoke of FRH as potential breeding stock. The following quotes are from two similarly minded individuals that engage in local independent type research,

another argument for leaving the horses out there is because wild horses make the best horses. That is why they were caught in the past, valued and bred back into domesticated horses (I14).

there’s some wild horses that I am studying that have had DNA extraction crossed with some quality thorough breed quarter horse blood since the early 1900s. They are hugely valuable animals and I would like to see them protected. They have blood lines and selective breeding that should be carried far into the future” (I13).

One Métis respondent who had a very different worldview toward FRH than the two respondents quoted above, voiced a similar opinion regarding breeding, “perhaps the horses could be used to raise a better breed. Take some babies out of that” (I8).

7.9.5 Range Health

One local researcher commented on riparian areas and cattle. She also spoke of concerns that cattle people may have regarding horses intermingling with their cattle. The solution she suggested was moving the salt lick that attracts horses. “All you have to do is move it [the salt lick] if you want to keep the horses off the cattle area where the salt is... you can put a water trough in front of an area where there’s mud and the cows prefer the water trough and that further protects the riparian area” (I13).

Range health was the focus of conversation with a government employee previously involved in research on FRH. This respondent suggested that there are areas where FRH may be overgrazing the land, “all I know is that it appears that the preliminary information and the results...they indicate that horse populations are increasing and I think there’s evidence there to show that they are having an impact on the ecological health of the land” (I24). He continued to speak of the use of ‘good’ principles for land management of local ranchers and their focus on stewardship.

...range health is one [tool] that we developed that became a tool for us to monitor the health, ecological function of rangelands...that’s why we recognized that something was not right because we would have these really good stewardship ranchers that know their business and we have really good information about the balance of how many animals can graze the area with the available forage supply...the solution always is towards the ecological health and function of the land ...not saying that in the real world all the ranchers and all the livestock people are great managers and everything is fine and dandy, that’s not

true, but for the large part it is because that is their livelihood and most of the ranchers that I have worked with especially recently in the last ten years are good stewards (I24).

7.9.6 Ranchers need Incentives to Manage FRH on Grazing Leases

Along the same lines as the quotation above dealing with ranchers' use of 'good' principles for land management, local ranchers and land lessees expressed concern over their rights to manage the land and the horses in ways that they deemed appropriate. Local ranchers and grazing lessees articulated that trust (of them) by government authorities is a necessary component for the continuance of a functioning relationship. One cattle rancher and land lessee raised concern over the government taking away his 'tools' to manage FRH (I18). When this respondent spoke of 'tools' I understood that he meant his rights, entitlement or freedom to manage the land and the FRH residing on it. The representative for Alberta Beef indicated that more responsibility and restrictions were being put on lease holders; his remarks below highlight some of his concerns and the role that he allocates to FRH:

Grass is valuable and needs to be looked after. Good management increases production. Horses can be part of that management. We need to harvest and control them. It is not at all realistic to shoot them all. They have a place...some leases are so big that the horses may stay in them at all times. There are some large grazing leases but the leases are not everything that is out there. There are areas for the horses where there are no leases and no cattle. They have a place. Horses can help manage the land...it is not right for the government to take away or reduce a lease because there are too many FRH on that land. Recently the government has told a person I know to lower the FRH numbers or else there would be consequences to his lease. Horses are selective grazers and they may come to graze different grasses on a lease.... We do not pay much for the lease but we have other costs and responsibilities like keeping up fences. The land is large and there are a lot of fences to keep up. We are responsible for the condition of the lease and so we have to keep out quaders and recreation people when they do damage to the wet areas...People took space from wildlife but it needs to be controlled. The responsibility is personal. It is difficult when government or animal rights people try to take over. We need an awareness of what is out there and realistic management. I enjoy watching wildlife but not when there is a coyote chewing on my cat (I7).

Incentives and compensation for catching FRH were often cited as ways to help with FRH management without overburdening ranchers (I21; I23). Some ranchers, however, experienced FRH foraging on land leases intended for their cattle; these ranchers then felt they were unfairly asked by the government to manage FRH numbers on their leases. Explicitly establishing appropriate or tolerable numbers of FRH on public grazing lands was also suggested as necessary. When asked what he thought about managing FRH on his private or public grazing land a large cattle operation manager indicated:

...having well established goals and having well established tactics and strategies to achieve that [landowners managing FRH numbers]. Also offering compensation like some monetary incentive to those that would be responsible to manage them [FRH] so rather than penalizing us as a landowner, as a permit holder, because feral horses are taking all that forage out of use. It would make more sense to me, the way that we function as people and our economy and from a financial point of view, to provide an incentive or reward us to be able to manage those numbers down. I would be a lot more motivated and probably be more focused on getting the right number if I was rewarded not just from the market point of view, from the free market as to what those animals are worth, but also if SRD said, well, we are willing to give you a certain per head payment for helping us work together to help us achieve whatever goals that we have collectively set (I21).

One local rancher and citizen researcher addressed similar concerns regarding the coercion of ranchers to solve FRH problems. Furthermore this particular respondent raised concern over the humane treatment of FRH during capture and once they are caught. He suggested legislating and revising the permit system to include the intentions of the applicant once they have captured the horse:

There are many extremists. What we need is compromise on certain aspects. There needs to be management when wild horses move in on a grazing lease. SRD puts the pressure on the ranchers to solve the horse problems. The responsibility is put on the rancher to take care of the horses on their land. Ranchers don't make a lot of money; they will do what is most efficient for business. What we need is to get legislation under the wildlife act. To get ranchers to catch horses in a humane way. Write out what a humane method is. Tell them which horse to take out, the ratios, the numbers of mares to studs. But then again if you take out the wrong horse you could disrupt the entire system... Now we don't know what

happens to the horses once they are caught. The caught horse should get a one year minimum to be trained as a saddle horse. There is no legislation now on what to do with a wild horse once it's caught. The permit is not issued based on what the applicant plans to do with the horse once it is caught (I14).

There was agreement with the respondent above and Interviewee I21 on the ranchers doing what is most efficient for business. These two respondents belong to very different worlds and perspectives with regards to FRH. One is a protectionist based cattle rancher with an interest in doing his own research related to FRH while the other is a large cattle business manager who would like to see a significant decrease in FRH numbers. The two respondent positions did meet when it came to specific descriptions of rancher responsibilities. This illustrates that if given the chance to participate in policy creation, people in disagreement may have a connection (cattle) from where to start a conversation.

7.9.7 Legislation

Two proponents of free roaming horses suggested legislating free roaming horses under the Fish and Wildlife Act whereas one Métis respondent suggested that Forestry control the horses. A WHOAS member indicated that once FRH are protected under legislation WHOAS would help with problem areas and other issues such as horse relocation. Both the WHOAS president and this WHOAS member suggested a special amendment or independent legislation regarding hunting and FRH treatment.

The Métis respondent felt that because FRH are not wildlife, and do not fall under the Fish and Wildlife Act, Forestry should govern the horses. He was also not a proponent of grazing cattle in large numbers and went on to suggest that those with grazing leases control horse numbers, “for people with grazing leases maybe they should take out so many horses. The horses

should be controlled by Forestry because they fall under that more than Fish and Wildlife because the horses are not wildlife. The government should take care of it” (I8).

Legislation regarding FRH in and surrounding Grand Cache and the Willmore Wilderness area is locally advocated for by the WWF. The WWF supports practical and local experience and knowledge, and would like to see legislation policies that directly reflect and support the local way of life. Specifically, the WWF advocates for the traditional values and land uses set forth by early guides, outfitters, trappers, Aboriginal, and Métis people also called the mountain people. Used for clearing traditional pack trails and sites, FRH were and are a part of the way of life in the area, as is trapping and wild fur management. Part of the traditional way of life in the study area is for experienced mountain people to catch FRH using snares and roping methods and then train the horses for use in the community. “Policies coming from urban centres don’t make sense for us out here” (I6).

Other respondents discussed aspects of existing and potential legislation based on catching a specific number of horses and horse demographics (sex, age). According to one respondent involved in industry and one WHOAS member, it is difficult to catch and humanely pick out certain horses based on age or sex (see 7.9.8 Permits). Picking through and releasing frightened and agitated animals is difficult. One WHOAS member addresses the difficulties of reaching quotas and comments about creating a management program:

I think it [FRH management] would be better with legislation because if there was legislation then maybe we could sit and talk to them [government] and come up with a complete policy. As it is it’s three studs and one mare but you know when you go to cull your herds for example you need to be flexible on that because you go into one bunch for example and there might be two studs there and a mare that is crippled, maybe there’s two or maybe there’s an old one that you feel sorry for that you don’t want to shoot but really if you wanna maintain the numbers and if you are going to farm it there might be one or two there that you seen for four years in a row that’s never had a colt for example versus the young

one, they have to take that one. There's a bunch of variables that you could work at with your program if you were actually discussing that. We really would like to see a program passed and then they would let us or let anybody that's capturing them to take the younger ones especially the stud colts (I10).

The following example illustrates clearly that WHOAS, as an organization, contains actors that share the organization's vision in different ways. Lending further support to the theoretical aspect of situational analysis which states that different ideologies exist even within a single unifying organization. The WHOAS president spoke of his vision for the organization to become part of the future management of FRH. The horse capture regulations that he would like to see in place, a future facility that WHOAS is working toward, and future intentions of WHOAS are notes below:

If they ever did become a problem in a particular area we recognize that they have to be managed and we started working on a program...we had proposed to the government in 2005 a proposal for management and it wasn't even considered. We are working on a new one where we have to keep horses out there and they won't be the old studs and they won't be the old mares but lets take some of the young ones and make sure that the numbers are strictly regulated under a new Act and that if we take just the young animals, a certain number every year, these animals can be broke, they can be handled. We'd have to build a handling facility for them and it would take only four or five years before the herds balanced out and the numbers stabilized completely... They are aware that we are there and that we watch things and in some cases we have rescued a few and have had to move a few horses off of private land and we have tried to work with them and we have received their approval to do the things that we have had to do so far (I22).

we will continue with our public awareness. We are going to continue with our development of management objectives and plans. We continue to lobby the government to conduct changes...[better management]...new definition of the animals, new act, and better management practices along the guidelines that we see (I22).

Another WHOAS member spoke of a FRH facility that was envisioned more as an educational outreach facility.

7.9.8 Permits

As part of FRH management, Alberta's Environment and Sustainable Resource Development (AESRD, 2014d) department provides interested applicants with permits for horse capture. The Alberta government communications person for AESRD stated that:

horse capture regulations specifically address feral horses. The mandate spells out what rules are in place to administer the capture of horses. Permit seekers register with us and we check their practices and ensure that they use appropriate methods in capturing the horses (I16).

Three respondents criticized the permit system in part for changes that had been made, such as moving forestry personnel into towns or cities, thereby detaching them from the land and local communities. One respondent called current land managers "computer biologists" because of detachment from hands-on practices. Also, respondents perceived that the policing of the permit system had eroded, so there was concern about whether permit holders were capturing horses according to the criteria set by the permits and related mandate (I2; I19; I3). One respondent went as far as to say that there is "no system left" (I19).

[Horses] should be treated the same as wild animals with permits to catch them with supervision. They [AESRD] just give the permits but there is no supervision now. They laid me off because we don't have any money to spend on them horses. Since they laid me off in 2000 well actually 2005 was the last time I was checking on wild horses and permits...they can't afford to pay ya... Control the numbers and do it under supervision not just give them a permit and let them [FRH] go. Also the permits should include Natives" (I2).

The manager of a large cattle business operation spoke about the 3 studs per one mare ratio and the difficulty of practically executing such a policy.

I was specifically given a different set of parameters to follow this winter on my horse capture operation [regarding 3 studs per mare]. That is not practical [3 studs per mare]. It does not address the management issue anywhere near well enough. It is extremely hard to manage within that ratio. The handling of these horses when you capture them, if you want to talk about handling things in a humane manner, when you are trying to sort and release and keep animals to that ratio...there's a lot of pressure and stress on those animals

and...you can't reach the numbers that you need to reach...total numbers in a capture season to be able to effectively reduce the impact on the environment that they are causing (I21).

In the material that follows, I present several respondents' opinions [or perceptions] relating to the importance of managing FRH numbers. The first respondent quoted below witnessed a decrease in FRH numbers, while the second respondent quoted suggested that horse numbers have increased; both of these respondents, and the third respondent quoted, comment on the permit system and how it is or might be used.

I think just monitoring. Monitoring is a bad word, it is kind of a word for saying doing nothing. That's what I think you need to do and put [distribute] the permits accordingly. They do aerial surveys for all wildlife management so if they see a big increase in horses they keep the permits going; if they don't, they should cut them back... I know there's a lot less horses than there was 30, 40 years ago and in some of the areas like the North Saskatchewan I haven't seen a wild horse there since the late 1960s (I1).

Yes. Give more incentives to keeping the numbers at the level they should be at. We should be more proactive. Historically there were no guidelines...anyone could trap the horses. A few years ago the permits were introduced and that made it more difficult to get the horses so the numbers went up... I support the permit system. First we need to decide on manageable numbers. We should have a permit system. There is a bounty on wolves right now. The government could similarly pay x amount per horse if necessary. The government could provide an incentive (I23).

Clarity on the [horse] numbers that are out there...people need to be realistic...the permit system works, otherwise it would be a free for all and anyone and everyone could get the horses...people go onto the grazing leases and that makes it worse for the lease holder. We used to be much more accepting of people using the land but when we are responsible for it we have to be careful. Hunters are still allowed and ATVs are sometimes let onto the land when the water is frozen and they cause less damage. The lease holders have some control over who is corralling the horses (I7).

7.9.9 FRH Workshop (working group)

Two respondents explicitly suggested a government initiated workshop where concerned parties could exchange ideas and come to some agreement regarding the management of FRH.

The workshop should involve researchers, wildlife managers, WHOAS. Maybe I'm idealistic but some sort of agreement on some management of the horses could be reached (same as I24). The horses need to be managed-just look at the Australian situation...keep the ecosystem as natural as possible. Otherwise the horses could take over the ecosystem. The government needs to step in and take action otherwise the issue will become more controversial and more difficult to handle (I24).

7.9.10 Management Suggestions

Currently, Alberta's ESRD department manages FRH. Their position is that FRH are not wildlife but they are part of the heritage of the area, so small numbers should remain despite being an introduced species. FR horse numbers are estimated through the use of aerial photographs. The government estimated that in 2012 there were close to 1000 horses in the area and that capture rates varied and depended "on the number of feral horses in that particular year and horse density in specific areas" (I16). Local people with grazing leases spoke about being asked by government about FRH and problems that FRH are causing on their land, suggesting that capture rates may also reflect residents' observations.

The government of Alberta spokesperson commented on the management of FRH numbers:

...we have not been managing for a specific goal for the horses; we manage them to address their impact...our policy on capture aims at providing permits for capturing about 20% of horses in any particular year, as horse populations can increase from 15% to 20% (in some cases as much as 30%) in one year, depending upon favorable breeding and/or wintering conditions (I16).

The spokesperson also addressed the government's point of view regarding land management and the general managerial role of the government.

We have been managing public land for over 100 years so policy development and monitoring horses is day to day and ongoing. We are here to ensure that renewable resources are managed appropriately and for the future. Also so that people follow the rules, pay fees, etc. (I16).

Far from the position presented by the government, both Indigenous perspectives suggested that FRH are best at managing themselves.

The stallion will only breed depending on things like weather and health. The stallion knows what the herd needs, he's the best manager of the herd. Not like elk, their numbers can get large. A mature stallion will only breed certain mares and he moves the herd around depending on what they need (I12).

This perspective is line with previous comments made about restrictive artificial boundaries that humans impose on wildlife, including horses. One Indigenous elder spoke of the artificial boundaries that have been created, as well as how tourists behave in ways that are damaging toward wildlife and the environment.

All ranchers and grazing land lease owners agreed that FRH need to be managed by humans. However, I noted that the comments of grazing lessees and ranchers revealed a spectrum regarding how much human interference was appropriate. One grazing lessee expressed concern over handling the horses because that could threaten their free roaming position saying: "[handling] needs to be managed. I know if we manage it we can't really call them free roaming but then you don't have to handle them to manage them". Farther along the spectrum another grazing lease owner was adamant about FRH numbers being at their limit without being handled or managed. "...we are at the point where it's pretty well at the maximum limit without being managed" (I18).

A breeder of high performance horses was concerned that horses appeared to be wandering off the reserve and onto his property. He described the process that he had used to get First Nations horses off of his land. The breeder's position was that government should manage

the horses on public land and owners should manage the horses on private land by calling the brand inspector. He described the process:

We contact the brand inspector and he hauls them away, sells them and then the money made goes to the government. If no one ever claims the horses that are hauled away the proceeds of the sale eventually go to cover the costs. If we have to keep them for a period of time we get compensated for the feed but that's it...on the crown lands the government should definitely set the goals. When they [horses] intrude on private land then the present policy allowing land owners to catch the horse and turn it over to the land inspector works; although sometimes catching them is quite a challenge (I17).

Furthermore the breeder spoke of 'illegal brands' that Indigenous people may create and use, "then I phoned the brand inspector cause [the horse] he had a brand on him that I didn't recognize. The brand inspector told me it was an illegal brand. That's often the case with Indian horses" (I17). Legally creating and then registering a brand is practiced among some horse owners. The Brand Act (2000, c. B-6) as well as the Livestock Identification and Brand Inspection Act (2000, c. L-16) ensures that brands are used only once, verifies ownership and supplies visual identification. Branding horses and cattle is voluntary in Alberta.

Although branding horses was not directly discussed in the interviews with Indigenous people, it was evident to me that they held a different view toward horses and the branding practice. Many Indigenous people view FRH as wildlife and even domesticated and owned horses are sometimes treated as semi-wild. (Semi-wild horses are released onto large areas of land, to forage for themselves, to reproduce, and to live and die with little or no human involvement). Descriptions of spiritual connections to horses were common in Indigenous dialogue whereas respondents with European ancestry, generally, did not frame their answers within the context of spirituality or as being connected to horses on a deeper level. One Indigenous respondent spoke of horses as taking away his ailments and sicknesses.

I explain these cultural differences through the use of situational analysis where people and groups belong to different worlds or societies. Situational analysis debunks the concept of a single ‘society’; rather many societies exist. There is no single society that is referred to in colloquial discourse. In my research I illustrate these multiple societies as arenas and worlds. Sometimes one broader, more encompassing society may connect a larger group of people and their widely shared understandings, but there are always other, sometimes silenced, ‘societies’ that may be connected through their shared but different understandings. Indigenous people may practice branding under a different set of assumptions in a connected but separate world. Failing to follow ‘western’ rules of branding or creating separate rules altogether may signal a larger political form of protest. Further research stemming from Indigenous communities is needed to provide informed explanations on the matter.

I make recommendations in the final chapter on future research directions, one of which is to further explore positions of local indigenous communities regarding FRH. The concluding chapter ties together my research in the form of recommendations on future FRH policy and I make final comments on my research questions.

CHAPTER 8: SUMMARY AND RECOMMENDATIONS

Reflexive Excerpt 9

Once in the field, I was struck by how much I had left to learn on my research topic, despite extensive research and reading that I had done prior to conducting interviews. Documents published by the government and books on the topic did not prepare me for the breadth and depth of knowledge held by those who live, work and spend their time on the land with free roaming horses. Suggestions on fencing, land use and what FRH actually do was an eye opening experience. So much more of what people out there know and experience could be documented. I am sure that I could not find the practical, daily experiences described anywhere in a book the way I did during my time in the communities.

In this last chapter I provide a brief summary of the results, and broadly describe how and where (in the thesis) my general questions and objectives were met. Recommendations stemming from the research are presented and future areas of research are suggested.

8.1 Some Concluding Thoughts on my Research

Working with a wicked problem is not easy and does not lend itself to concluding the research with a definitive solution. In many ways I feel as if I have only started to understand some of the intricacies of human-FRH interactions. Below I present several concluding thoughts on doing research with a wicked problem, my research goal, and my theory-methods bundle of transdisciplinarity and situational analysis. Local knowledge, which plays a large part in my research, is discussed in light of the policy process.

1. One defining feature of dealing with wicked problems is that there is less focus on debate and more on sharing and understanding various perspectives and values, and that differences are handled with courtesy and respect. My approach was to present perspectives and positions of the respondents, and to demonstrate the worlds and arenas

relevant to the research on FRH. I made a genuine effort during the entire research process to remain reflexive, and to include and give fair consideration to points of view that challenged my own values and positions on the topic.

2. At the outset of my research, my broad goal was to inform policy. My research evolved and explored unforeseen avenues but I believe it stayed true to my original goal. As I progressed through the research process I attempted to describe the perspectives and discourses of multiple collective and individual actors toward FRH in the research area. The local experiences and practical knowledge the respondents shared with me imparted exceptionally rich and useful suggestions for policy and about FRH in general. Without the generous contributions of those who kindly allowed me into their lives and homes, and offered their time, knowledge and expertise, my research could not have succeeded; I am grateful for their invaluable assistance.
3. The study of human-free roaming horse interactions can be defined as a ‘wicked problem’ and that broad, hard-to-define topic led to my exploration of transdisciplinarity and situational analysis. After my first season of interviews I felt overwhelmed by the diversity of perspectives and the breadth and depth of the research topic. I found answers on how to handle such breadth in the form of theoretical and methodological transdisciplinarity and social mapping (situational analysis). Viewing human-horse interactions as a wicked problem, rooted in transdisciplinarity and situational analysis, allowed me to accept the breadth of the problem by recognizing multiple layers, worlds, arenas and complexity. Employing a transdisciplinary approach enabled me to include diverse positions, to focus on the problem rather than the discipline, and to view

respondents as valuable and knowledgeable research partners. Although I discovered situational analysis later in the research process, this tool highlighted the importance of the inclusion of local and historic knowledge in my research, and allowed me to document and illustrate positions regarding FRH from many diverse perspectives.

8.2 Concluding Thoughts on the Relevance of Local Knowledge

Local values, knowledge and experience have not been included in the policy process dealing with FRH with the exception of stakeholders reviewing the horse capture permit system (see Permits 7.9.8). Local knowledge seems to be excluded, perhaps because it is considered biased, but in many cases FRH are part of a socio-ecological culture and cultural identity as well as part of the ecological and social biodiversity of several communities in the research area. My research focus on local knowledge and local worlds, and their respective positions help fill this policy gap.

Some stories from local, long-term knowledge holders recognize the importance of non-human life and the land itself. My understanding is that healthy communities and healthy ecological systems are not, and should not be, mutually exclusive (Cronon, 1995). Conversations regarding FRH, culture, community and the environment do not have to be divisive. Situational analysis provided a tool to map the positions of the worlds of respondents living and interacting with FRH in the research area. Understanding local actors and their positions can lead to an inclusive and more democratic policy process. Communities are intertwined with the ecology of a place. Given that all but one of the respondents felt that FRH should remain on the landscape speaks to the part FRH play in the communities and the feeling of ‘heritage’ the horses invoke.

Ideally, as policy makers tackle this wicked problem in the future, they explicitly will include multiple positions, and grapple with the interconnectivity of interest groups and individuals to make the informing of policy relating to FRH that much more democratic. If, in addition, policy makers could embrace and implement higher order thinking concepts (defined in section 5.1.3) during the policy process (see discussion on wisdom in section 5.1.3) wiser decisions may result.

8.3 Research Questions Revisited

In the introductory chapter I presented five research questions. Since each question is related to, or dependent on another, it is difficult to pinpoint specific chapters or sections where each question is answered. For example, local cultural interactions with FRH are not independent of history or of the problems or benefits that the horses generate. Nevertheless, in the sections that follow, I list each research question and provide direction as to where it is answered.

1.a) How have local cultures interacted with FRH historically?

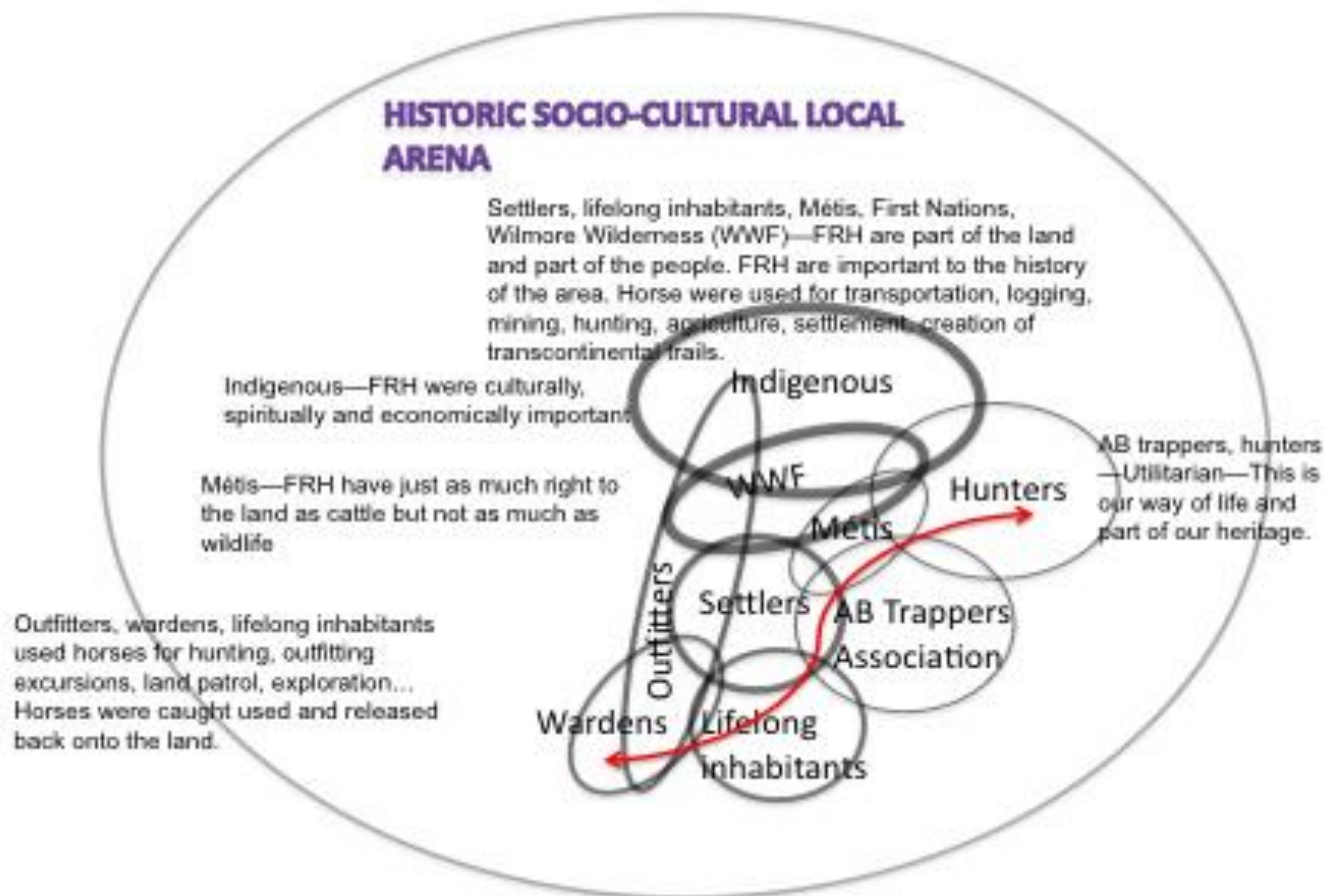
I discovered that wardens, outfitters, Indigenous people, mountain people, Métis, and individuals who use or capture FRH to work with, breed or train, have especially meaningful, spiritual and/or practical relationships with FRH (Table 8.1). Most aspects of this thesis deal with local cultures and knowledge of FRH. Multi-generational and generational individuals and groups make up local cultures and hold positions that reflect historic perspectives.

Table 8.1: Support for Research Question (1. a)

Research question: <i>How have local cultures interacted with FRH historically?</i>	Section(s)
The foreground chapter reviews historic and contemporary cultural worlds in the research area	
Socio-cultural Arena	3.4
This table shows that wardens, Indigenous people, Métis, outfitters, tourism, permit inspectors, ranchers/grazing lessees, trappers/hunters, settlers, life long inhabitants were historically involved with FRH.	
Table 3.10 Overlapping respondent worlds	Table 3.10
This table demonstrates the temporal interactions respondent groups had with FRH. Most groups had historic interactions with FRH.	
Table 5.1: Temporal Description of Respondents Involved with FRH	Table 5.1
Local values, local ways of life and community based historic positions are described in the sections highlighted below.	
Métis connections to FRH in Alberta	5.1.2

A summary of historic socio-cultural local relationships to FHR is presented in Figure 8.1. The thicker lines around the worlds display the strength of historic connectivity to FRH. The Figure illustrates worlds that are connected to FRH and to the cultures in the research area. Overlapping worlds share similar perspectives whereas worlds situated farther apart on the map are not as closely related to one another. The arrows demonstrate that the two worlds are also closely related. Trappers and hunters, as a group, demonstrated the least connection to FRH historically. Métis that self-identify as mountain people have a strong historic and contemporary attachment to FRH (whereas one Métis respondent who did not identify as a mountain Métis did not have a strong attachment to FRH).

Figure 8.1: Relationships Between Worlds and Positions of Historic Connectivity to FRH



One aim connected to my first research question was to include actors, actants and local perspectives that previously may have been omitted from decision making processes related to FRH. The Alberta provincial government created a feral horse advisory committee in 2013 consisting of stakeholders and government staff to provide input on current feral horse management (AESRD, 2014b). As of 2014 the groups invited to participate consisted of: Alberta Equestrian Foundation & Alberta Horse Welfare Alliance of Canada, Alberta Farm Animal Care Association, Alberta Fish and Game Association, Alberta Professional Outfitters Society, Alberta Veterinary Medical Association, Alberta Wilderness Association, Capture Licence Holder, Livestock Identification Services Ltd., Rangeland Expert at the University of Alberta, RCMP Livestock Investigator, Rocky Mountain Forest Range Association, Spray Lake Sawmills, Sundre Forest Products, and Wild Horses of Alberta Society. If their meetings were conducted democratically, the groups reported as participating were sure to provide varied insight into FRH issues however there appear to be several groups missing from the committee. Indigenous people, mountain Métis, mountain people, local researchers and less organized local perspectives such as those of acreage owners or grazing lessees were excluded from the committee.

In my analysis of the dimensionality of human-FRH interactions, I have identified the relevance of perspectives held by—and suggested further research with—Indigenous, Métis and mountain people (and other marginalized groups). Due to the restrictions of scope, time, and funding of a graduate thesis there is more to learn from the stories and perspectives of Indigenous, Métis and mountain people than what I have been able to study. Including more detailed positions and stories from knowledge holders with historic perspectives would provide

greater cultural and historic understanding and insight into FRH and human interactions, and contribute to more broadly-based decisions regarding FRH policy. Also, it appears the Alberta government provided a narrow scope for discussion by solely concentrating on capture permits. While one can understand the trepidation any government might have in opening up a broad topic for public discussion, ‘allowing’ the unknown and unpredictable positions to become part of the discussion is not only democratic but provides a richer, deeper understanding of the topic and, perhaps, wiser policy decisions.

1.b) How do local cultures continue to interact with FRH?

Stories and memories shared among family and community members have kept FRH a culturally significant part of the area. Local people continue to use horses and, at times, FRH for clearing trails, engaging youth, outfitting, and for expeditions. FRH that have been tamed are also used to catch other free roaming horses to use for outfitting or for breeding purposes. Some local people use FRH as a recreational pursuit to chase and capture, while others use FRH as breeding stock or to train as saddle horses. Another contemporary effort is made by WHOAS to rescue and train FRH that are abandoned or hurt. Tourism, although limited as an industry, is another example of a contemporary “use” of FRH. These interactions and others are described throughout the thesis but mainly in the foreground chapter and in the results section of the thesis (Table 8.2)

Table 8.2: Support for Research Question (1. b)

Research question: <i>How do local cultures continue to interact with FRH?</i>	Section(s)
Chapter 3 reviews historic and contemporary cultural worlds in the research area.	
Overview of socio-cultural worlds	3.4.1
Local values, local ways of life and community based cultural positions are described in the section listed below.	
Phenotypes and Behavioural Traits of FRH in Alberta	5.3.3
The following sections of the results chapters and discussions address interactions with FRH. Problems and management suggestions also answers the question of local interactions with FRH. Observed predator-prey interactions describe how respondents view the role of free roaming horses in the environment.	
Problems, Benefits and Predator-Prey Relationships with FRH	6.1-6.13
Predator-Prey relationships Related to FRH	6.14.1- 6.14.4
FRH Management	7.1-7.9

2.a) *What types of existing problems/management/classification of FRH do local people identify?*

(see Table 8.3)

Local people identified problems as well as benefits associated with FRH. Recommendations for management of FRH varied extensively from leaving them alone to gathering horses to be processed. I elaborate on recommendations to manage FRH in the General Recommendations section below. The way in which respondents classified FRH varied from wildlife to introduced species.

Table 8.3: Support for Research Question (2. a) in Table 1.4

Research question: <i>What types of existing problems/management/classification of FRH do local people identify?</i>	Section(s)
Described Timelines, Ancestry, Phenotypes and Classifications of FRH	5.3
Problems, Benefits and Predator-Prey Relationships with FRH	6.1-6.14
FRH Management	7.1-7.9

In Table 8.4, I revisit the most prominent benefits and problems described by respondents. I do not view the problems and benefits dualistically as the table might suggest. For example, there are areas that have larger concentrations of FRH than other areas and FRH may graze grass allocated for cattle but FRH may also contribute to controlling birch, willow and poplar by their trampling and grazing habits, thereby opening up more grazing land (for wildlife and other grazers). Another example of seemingly opposing points of view is that of FRH polluting or purifying water sources. Large numbers of horses may ‘pollute’ water bodies while lesser numbers may lead to water purification, as respondents in each camp suggest. The problem reported most often by respondents was that FRH behave aggressively toward domesticated horses and that they try to steal and breed domesticated mares. Solutions that respondents implemented with mixed levels of success are discussed in the problem section (6.8 and 6.13). Overall, problems appear to be geographically and/or economically specific.

Table 8.4: Prominent Benefits and Problems

Problems	Benefits or counter arguments to problems
<ul style="list-style-type: none">• Large numbers of FRH• FRH stallions behave aggressively toward domestic males; they fight, steal and breed mares (this was seen as a problem by the largest number of respondents)• Rangeland health is compromised by FRH• FRH behave aggressively toward domestic horses in campgrounds or when people are riding them• FR stallions break and damage fences• Graze grass that is allotted for cattle• Overgraze certain areas• Erode stream banks and deposit manure in water bodies• FRH disadvantage wildlife by competing for graze with wildlife• Destroy or graze seedlings that forestry planted• Cause erosion	<ul style="list-style-type: none">• All but one respondent agreed that FRH should remain on the landscape• FRH fertilize land, fertilize the muskeg• Re-seed plants through manure• Multiple grazers including FRH have a positive impact on plant/land health• Purify water by creating drainage• FRH control birch, willow, poplar overgrowth and expose and maintain productive grazing lands• FRH are able to expose forage by digging through ice and snow, aiding other ungulate grazers• Reduce fire hazard by grazing on thick old grass that other grazers reject• Human activities such as logging, ATVs and oil extraction activities cause more damage than horses• Provide opportunities for tourism• People are spiritually connected to FRH

2.b) Why/how do local, cultural, historic groups vary in their acceptance levels? (Table 8.5)

Local interest groups and individuals may belong to different and overlapping worlds.

Respondents and people who share land with FRH hold different worldviews, histories, stories, cultures, economic concerns and pressures. These and other aspects result in different, sometimes intersecting, worlds and arenas. This dynamic interconnectivity is why higher level thinking, making connections between complex interdependencies and transdisciplinary understandings are important contributors to better understand human-FRH interactions and an opportunity to add more dimensionality to decision making.

Table 8.5: Support for Research Question (2. b)

Research question: <i>Why/how do local, cultural, historic groups vary in their acceptance levels?</i>	Section(s)
Described Timelines, Ancestry, Phenotypes and Classifications of FRH	5.3.1-5.3.4
Discourses on Problems with FRH - Grouped Respondents	
Geographic Discrepancies and Grouped Responses	6.1
FRH Population Numbers, Benefits and Problems	6.2
Grouped Responses on Management	7.1

3. How are discourses related to one another? (Table 8.6)

Discourses are best viewed on a spectrum with varying levels of interconnectivity; some discourses overlap in their positions, some are farther away from one another, and some disagree more than others even within their own worlds. This thesis took an initial step in exploring and attempting to illustrate different positions. Multiple figures and maps throughout the thesis illustrate various ways of describing respondents, worlds and arenas and their positionality relative to one another. Policy makers can use the diverse descriptions of respondents, and the positions illuminated through the use of the maps, to help inform policy based on agreement between worlds as well as identify areas of contention. Policy makers may also use the research to identify (geographically and between social worlds) areas where intervention may be needed. For instance remote geographic locations in the vicinity of Hinton and Grand Cache might require less intervention to manage FRH or depend heavily on fewer local cultural positions because there are potentially fewer groups in number and yet greater cultural dependency on FRH than in (e.g.) Sundre. The proximity of Sundre to Calgary has added pressure from multiple worlds and actors for different and more intense uses of the land. Hence, across Alberta, the

policy process might vary from one community to the next because of different socio-cultural, political, economic and features of the communities that are involved.

Table 8.6: Support for Research Question (3)

Research question: <i>How are discourses related to one another?</i>	Section(s)
Using social mapping to illustrate how local worlds and their interrelationships are related to one another.	
Government, Science and Research arena	3.1
Industry arena	3.2
Legislative arena	3.3
Socio-cultural arena	3.4
Discourses of local knowledge, horse origins and classifications and how they are related to one another are addressed in the following sections.	
Colonization and European Horse Re-Introduction to North America	5.2.2
Primarily Western Theory on Indigenous People and FRH	5.2.3
Alternative Theor(ies) on FRH from Indigenous Perspectives	5.2.4
Respondent Classification of FRH	5.3.4
Geographic Discrepancies and Grouped Responses	6.1
Grouped Responses on Management	7.1

8.4 Recommendations Derived Through Direct Interview Questions

I propose that involving, collaborating with, and empowering local worlds will result in more informed, long term and sustainable solutions and decisions toward FRH. Although challenging and requiring greater time and effort on the part of the Alberta government, collaborating and consulting with local interest groups and individuals, has the potential to create more informed and resilient decisions and to increase local acceptance of decisions. Creating relationships based on partnerships can maintain public trust between decision makers and local people who are affected by, and in the position to uphold, those decisions and policies.

Currently, the involvement of local people in decisions regarding FRH is minimal or lacking altogether. The following recommendations, organized into two areas of discussion, are based on local interactions with FRH identified through my research.

1. Recognize, include and engage local FRH experts and local knowledge of FRH in the policy process.

Local people I interviewed spoke of feeling isolated from the governmental decision-making process as well as experiencing partiality toward urban perspectives. One way respondents suggested minimizing this occurrence was by bringing back or creating new programs that engage on-the ground, locally employed rangers and wardens who would be used to monitor horses as well as human activities in multi-land use areas. Along the same lines I suggest creating a community-based approach that involves interested community members in monitoring FRHs, their activities, and human interactions with the horses. There are various community members monitoring FRHs in specific areas and ways already. Using community interest in FRH could benefit the government by filling roles that have been abolished in order to save money. Engaging local interest groups may help minimize conflict and perhaps enable relationships of trust between decision makers and local interest groups.

Policy makers would be well served if they were to create partnerships with members of local communities who share land with FRH; these partnerships could help establish feedback loops to facilitate information and data sharing among community members and policy makers. The opportunity for politicians to learn from local knowledge holders is equally or more important than is dissemination of government research findings intended to ‘educate’ people to

see the FRH issue from the government's preferred perspective. One of the strengths of transdisciplinarity as a research approach is that it can lead to practical outcomes precisely because it includes, empowering and encouraging 'ordinary' people, to take part in research initiatives. Using locally engaged groups of well-connected leaders in the community is one way I recommend that government may fill gaps in governance that were lost when local positions were abolished.

Local respondents including indigenous groups, mountain Métis and multi-generational local groups culturally and historically connected to FRH recommend support for cultivating traditional and new activities with FRH. Based on recommendations of respondents, other local research (Galileo Educational Network, n.d.) and the work done by Bhattacharyya (2012), I recommend the Alberta government:

- Support for the development of local traditions and activities related to FRH.
- Support for initiatives related to FRH that engage youth and promote learning from elders.

Several local respondents spoke of 'others' (multinational corporations, government, urbanites) making decisions "on their behalf" about their land and the place where they live. Direct local involvement both through citizen research and local monitoring and in the decision-making process could counter this perspective and enhance feelings of empowerment and result in action.

If the goal is to minimize actual or potential conflict among interest groups connected with FRH, I recommend (as do several respondents) the creation of local workshops or working groups to drive policy on FRH. If the government of Alberta desires to minimize conflict (over FRH) between local interest groups and itself, the distribution of power to local communities is

required. Marginalized groups and removed rural people, especially, felt misunderstood by the government and reported that current FRH policy does not reflect their needs. If the goal is for local people to accept and abide by policy and legislation the government will be required to resign some power in a more democratic process of creating and maintaining policy.

2. Include all worlds and interested parties in the policy process. Define and create different 'management areas' based on socio-cultural and geographic characteristics and increase awareness within AESRD of local and historic worlds connected to FRH.

Respondents in my research confirmed that certain groups and individuals have been repeatedly ignored in any conversations initiated by the government regarding FRH.

Conversations on FRH that have been initiated by the AESRD have been narrowly defined and carefully controlled by the government. I recommend broadening the conversation to include various positions of knowledge holders such as those I have described through my research. The benefits of broadening the conversation are: inclusivity of citizens, a democratic approach to the policy process, potentially minimizing conflict among interest groups, and exposing policy makers to a better understanding of local perspectives. Furthermore, consideration of physical geographic and cultural geographic differences may be helpful to potentially define 'areas' for different management strategies based on horse populations, socio-cultural, political, economic, and ecosystem characteristics. Based on the direction set by my research I believe that decision makers could contribute to improved and locally beneficial FRH policy if they were to:

- Recognize where FRH-human interactions are positive and less likely to be in conflict.

- Recognize the cultural differences and attachments to horses that local interest groups possess.
- Recognize where human competition with FRH is minimal and where the physical geography is well suited for FRH.
- Recognize and define socio-cultural values that have been ignored and include these positions in the policy process.
- Create a voluntary reporting system on FRH, preferably initiated from the bottom up and led by one or more respected and well-connected local knowledge holders.

If the goal is to minimize conflict among local worlds then the political socio-cultural environment needs to be continuously monitored. If trusting relationships are nurtured among policy makers and local communities this process could begin with making connections and supporting conversations. To help achieve these desirable ends, I strongly recommend an increase in awareness (within AESRD) of local, historic, and cultural worlds that comprise the area where horses roam.

Cross-cultural bridges between AESD and local communities need to be established in order to gain perspectives from indigenous, mountain Métis or multigenerational people connected to FRH. Although some individuals may not be comfortable with or even willing to participate in regularly used venues or in formats of ‘western’ style working groups their perspectives are valuable and necessary and sincere efforts to include them need to be undertaken. If my recommendations to deal with the complex FRH problems in Alberta are to be

followed, future actions will need to focus on bridging efforts. Perhaps engaging University students and local youth could benefit cross-cultural learning and sharing.

8.5 Recommendations Based on Respondents' Independent Input

Detailed management options and respondent suggestions regarding management techniques are covered in sections 7.1-7.9 and 7.9.1-7.9.10 of the results. Here I focus on themes regarding management and policy that emerged independently through the interviews. The management suggestions made by respondents point toward general guidelines, areas to explore in more detail, and suggestions about how to inform and guide future policy regarding FRH.

3. Define areas and groups/individuals in greatest conflict and implement workshops geared toward conflict resolution, relationship building and mutual respect. Reach out to indigenous and related communities to garner participation and relationships.

Indigenous respondents, especially, felt that FRH manage themselves and that they should be left alone, which is a very different perspective from ranchers and grazing lease owners who strongly supported human management methods to deal with FRH. Several respondents noted that geographic locations where horses come off reservations and onto private land are potential areas for conflict. Although one respondent living on an acreage viewed the horses crossing over from the adjacent reservation as positive because they provided enjoyable viewing opportunities for her and for her neighbours. Most potential for conflict occurs where there is less tolerance for horses from the reservation because these horses could aggressively pursue domesticated horses or could occupy land that is allocated for cattle grazing. Such areas might need special consideration and plans to mitigate conflict (among people).

One suggested solution to FRH conflicts recommended by cattle ranchers and grazers was to compensate and provide incentives to manage FRH on grazing leases and private land. These respondents asked the government for more trust and less government intervention. Incentives, compensation and less government intervention for those grazing cattle might be a possibility where high populations of FRH exist on private land and cause damage. However, there are numerous positions to consider on public land, beyond those connected to cattle; perhaps areas where conflict exists or flares up between interest groups might benefit from workshops geared toward conflict resolution. I agree with respondents connected to WHOAS who recommend the government collaborate with groups such as WHOAS to help with problem areas and with the relocation of problem horses.

Positions of disagreement exist between government and interest groups. One example concerns FRH numbers and populations. Interest groups mistrust government research or view it as incorrect. Another example concerns bear counts in the Grand Cache area; local people conduct and publish their own population calculations (predictions) to counter those of government officials (Leonard, 2013). One potential solution is to engage a neutral party agreed upon as reliable by all interested parties, or for the government to include a member from the opposing interest group(s) in the process of counting FRH. Similarly, to help remove the distrust of government, an agreed-upon neutral party needs to be involved.

4. Develop local tourism. Actively involve, promote and include FRH in advertising related to tourism (e.g. through pamphlets in information centres, government helping to include FRH in tourism based websites and commercials).

Interest in FRH as a tourist attraction has been expressed through requests made to myself as well as in other research (Notzke, 2014); regrettably, few FRH tourism opportunities exist in Alberta. Two outfitter and horseback riding operations offer FRH viewing opportunities in the area, however one outfit has experienced difficulty because of the removal of FRHs from the area (Notzke, 2014). The difficulty of seeking out FRH is that tour operators have to know local people who possess knowledge on where the horses reside and often need to have access to leased land. For many tourists, their limited time frame and lack of understanding of local geography pose significant obstacles to viewing FRH. I recommend monetary and other practical forms of government support for existing and new tourism ventures to promote FRH viewing opportunities. Notzke (2014) reports on an outfitting enterprise within my research area that provides FRH viewing opportunities having lost business because AESRD removed or dispersed FRH from the vicinity used to view the horses. WHOAS, which is funded through donations (including a donation of 20 acres of land), suggested creating a refuge for injured or abandoned FRH. The protectionist group may also benefit from acquiring funds from tourism by providing viewing opportunities both at the refuge and in the wild.

5. Clearly and legally classify and define FRH.

Some respondents felt FRH are wildlife that should be managed through the use of hunting like wildlife while others vehemently opposed hunting of FRH. Other respondents supported the current capture permit system while others spoke of the challenges permits present. The current permit system was supported by some respondents. Detailed suggestions given for making the permit system more effective are included in the results chapter dealing with

management (Section 7.9.8). Several respondents supported FRH being used as a meat source. Some felt legislation and a more involved policy is needed to better address the issues.

Clearly defining FRH as wild, feral or ‘other’ (or a combination) may clarify which management techniques are acceptable or unacceptable, and which are to be determined by local involvement in the policy process. Bhattacharyya (2012) made the same recommendation in her thesis and was the first, to my knowledge, to address cultural aspects of FRH in Canada. Bhattacharyya (2012) also suggested that FRH themselves could be understood by using a spectrum of classifications that would allow for various management options in the geographically and socially diverse areas that they occupy. Keeping in mind that a major goal of my research is to inform policy, I suggest exploring a similar course with FRH in Alberta. COSEWIC assesses native wildlife species in Canada but they also include the term ‘wild by nature’ that, “might include captive individuals with recent wild ancestors” (Appendix E7, p. 1). In instances where respondents align their thinking with the definition put forth by COSEWIC they may be open to management techniques that view the horses as ‘wild by nature’. Respondents do not have such clear and consistent definitions of wild and feral, as laid out by COSEWIC but some respondents would likely align their positions with the horses being ‘wild by nature’. Gates (2014) uses the concept of wild by nature as local adaptation and geographic variation in his research on bison. If FRH were to be used as an ecological replacement to prehistoric horses they would require viable populations (addressing the debate on population numbers), habitat integrity and connectedness (addressing how much land should be available to them), and species interactions including predation and other environmental factors.

6. *Recognize that there are multiple positions on who should benefit from how rangeland health is framed and practiced.*

Rangeland health was a priority to an Alberta government spokesperson and to a government research related respondent, as well as to some respondents who graze cattle on the land. If land health is a priority, as I believe it should be, proponents of range health recognize that there are multiple and sometimes competing perspectives regarding *which species* (cattle, wildlife, FRH etc.) should be allocated grazing rights on public land as well as *who* (ranchers, protectionist horse groups, recreationists, wildlife protection groups) should be given access to, and the power to make decisions related to grazing lands. I also recommend making the mutually beneficial triangulated relationships between the cattle industry (government and research on rangeland health see section 3.1.3) and the way in which the concept of rangeland health is achieved, to be transparent and open to public scrutiny.

7. *Create opportunities for independent research from local people and communities.*

Adhering to one tenet of transdisciplinarity, I suggest promoting local involvement with policy on FRHs and the conduct of independent research on FRHs by local people. In addition, researchers or government should provide avenues to share local observations and research findings among interest groups and with government. If there is little local interest in creating a locally run, grassroots group to monitor FRH activity, a voluntary on-line system could be created and overseen by government or by a University researcher. Possible content could include human-FRH areas of conflict, FRH numbers, forage availability, land occupied by horses, wildlife and horse interactions, and other related conditions.

8. *Protect habitat and wildlife.*

Environmental protection, according to some respondents, would also benefit FRH because they, like other wildlife, need undisturbed space and habitat. A minority of respondents, however, thought that FRH compete with local wildlife. Preserving FRH as breeding stock because of their history and fitness was also recommended by a few respondents and was evident in locally written discourse.

8.6 Future Research

In my research, only 5 of 24 respondents were female; in the future, I would like to recommend that researchers seek additional perspectives from women, and focus specifically on Indigenous women. There are also perspectives to be gained from groups that I omitted due to time restraints such as Livestock Identification Services and other Indigenous groups in the area (not all reserves within the FRH ‘capture zone’ were included in my research). I suggest learning more about FRH from Métis and mountain people in the area. Research documenting how FRH fit into the ecology of the area might help with potentially classifying and predicting FRH populations. For example, one specific focus of future research may be on dealing with predator-prey dietary relationships and FRH mortality rates.

8.7 Where do we go from here?

The numerous and useful recommendations made by people sharing land with FRH can be used to inform future policy directions. Local people will either help make policy on free roaming horses a success or a failure. In the end (practically) it is local people who live with the

benefits or problems that FRH bring. Not only do local human populations hold valuable, authentic knowledge of the horses, their positions on the horses are vital to policy creation, implementation and long-term success. Much like the worlds I used to show various respondent positions (Figures 3.5, 6.1). I recommend that future policy address the ‘social worlds’, or people in the research area, using various flexible solutions or methods. For example, Sundre is a much more populous area with a larger demand on land use than areas around Hinton or Grand Cache yet the horses and related policy are viewed and managed similarly, if not identically. Hinton and Grand Cache do not have the same cattle grazing demands as Sundre; rather, people in these two areas encompass socio-cultural ties to FRH and how the horses are used. Through understanding diverse positions, policy makers will be better equipped to deal with situations of conflict and controversy. Understanding geographical, economic and social differences potentially makes a major contribution to informing and forming policy on FRH.

8.8 Future Directions

The area FRH occupy is large, the physical and social geography is difficult to access and expensive to monitor. Local support for effective FRH policy and local involvement in its implementation are essential not only from an enforcement perspective but in terms of a future policy creation and acceptance perspective. I suggest learning from local knowledge, leaning on democratic methods of policy creation, and remaining exploratory and flexibly open to social and environmental geographic differences. Local communities and individuals through their support or opposition to policy are most influential in making future policy initiatives a success or a failure. They thereby create and maintain local confidence, involvement and support,

imperative for future policy success. I would also suggest that efforts from policy makers to build local collaboration and partnerships might result in a resilient, successful and locally based and accepted policy. Empowering, collaborating and consulting with local communities about FRH policy is the best way to create a robust path forward to sustainable management of FRH in Alberta.

References

- Ackoff, R.L. (1989). From data to wisdom: Presidential address to ISGSR, June 1988. *Journal of Applied Systems Analysis*, 16, 3-9.
- Adams, B.W., Ehler, G., Stone, C., Lawrence, D., Alexander, M., Willoughby, M., Hincz, C., Moisey, D., Burkinshaw, A., Carlson, J. & France, K. (2009). *Rangeland Health Assessment for Grassland, Forest and Tame Pasture*. Alberta Sustainable Resource Development Lands Division Rangeland Management Branch. Government of Alberta. ISBN Number 0-7785-2848-0. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/grazing-range-management/documents/RangelandHealthAssessmentforGrasslandForestTamePasture-Revised-Apr2009.pdf>
- Alberta Agriculture and Rural Development. (2008, October). *Range and pasture management*. Retrieved from Government of Alberta website [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sag2111](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sag2111)
- Alberta Environment and Sustainable Resource Development (AESRD). (2013). *Lands & Forests: Range Health*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/grazing-range-management/range-health.aspx>
- Alberta Environment and Sustainable Resource Development (AESRD). (2014a). *Lands & Forests: Feral Horses in Alberta*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/land-management/feral-horses/default.aspx>
- Alberta Environment and Sustainable Resource Development (AESRD). (2014b). *Lands & Forests: Feral Horse Stakeholder list 2014*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/land-management/feral-horses/documents/FeralHorseStakholder-Mar%2020-2014.pdf>
- Alberta Environment and Sustainable Resource Development (AESRD). (2014c). *Lands & Forests: Grazing and Range Management*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/grazing-range-management/default.aspx>
- Alberta Environment and Sustainable Resource Development (AESRD). (2014d). *Lands & Forests: Feral Horse Capture FAQs, & Feral Horse FAQs*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/land-management/feral-horses/feral-horse-capture-faqs.aspx>
- Alberta Government. (2014). *Handbook of Instruments pursuant to public lands act & public land administration regulation (PLAR)*. Retrieved from Government of Alberta website <http://esrd.alberta.ca/lands-forests/public-lands-administration-regulation/documents/PLARHandbookInstruments-Feb19-2014.pdf>

- Alberta: Sustainable Resource Development (SRD). (n.d.). About Public Lands: Information on acquiring public lands [Pamphlet]. Retrieved from Government of Alberta website <http://esrd.alberta.ca/forms-maps-services/directives/documents/InformationAcquiringPublicLands.pdf>
- Alberta: Sustainable Resource Development. (2003, December). *About public lands: Grazing Statistics for Public Land*. Retrieved from <http://esrd.alberta.ca/forms-maps-services/directives/documents/GrazingStatisticsPublicLand-Dec-2003.pdf>
- Bakyt, N. (Producer). (1998). *Horses of Suffield*. Montreal, Quebec: National Film Board of Canada.
- Balint, P.J. (2007). A proposed general model for southern African community-based wildlife management. *Human Dimensions of Wildlife*, 12, 169-179.
- Barak, M., Ben-Chaim, D. & Zoller, U. (2007). Purposely teaching for the promotion of higher-order thinking skills: A case of Critical thinking. *Research in Science Education*, 37(4), 353-369
- Baxter, J. (2010). Case studies in qualitative research. In I. Hay (Ed.), *Qualitative research methods in human geography* (3rd ed.) (pp. 81-98). South Melbourne, Victoria: Oxford University Press.
- Baxter, J., & Eyles, J. (1997). Evaluating qualitative research in social geography: Establishing 'rigour' in interview analysis. *Professional Geographer*, 22(4), 505-525.
- Bearcroft, N. (1966). *Wild horses of Canada*. London: J.A. Allen & Co. Ltd.
- Beckford, C.L., Jacobs, C., Williams, N., & Nahdee, R. (2010). Aboriginal Environmental Wisdom, Stewardship, and Sustainability: Lessons From the Walpole Island First Nations, Ontario, Canada. *The Journal of Environmental Education*, 41(4), 239-248.
- Beever, E. (2003). Management implications of the ecology of free-roaming horses in semi arid ecosystems of the western United States. *Wildlife Society Bulletin*, 31, 887-895.
- Beever, E. A., & Herrick, J. E. (2006). Effects of feral horses in great basin landscapes on soil and ants: Direct and indirect mechanisms. *Journal of Arid Environments* 66, 96-112.
- Bellinger, G., Castro, D., & Mills, A. (2004). *Data, information, knowledge, and wisdom*. Retrieved from <http://www.systems-thinking.org/dikw/dikw.htm>
- Berger, J. (1986). *Wild horses of the great basin*, ed. G. B. Schaller. Chicago: The University of Chicago Press.

- Berkes, F. (2008). *Sacred ecology* (2nd ed.). New York, NY: Routledge
- Berkes, F., & Turner, N.J. (2006). Knowledge, learning and the evolution of conservation practice for social-ecological system resilience. *Human Ecology*, 34(4), 479-494.
- Bhaskar, R. (1976). *The possibility of naturalism: A philosophical critique of the contemporary human sciences*. Brighton, UK: Harvester.
- Bhattacharyya, J. (2012). *Knowing naslhiny (horse), understanding the land: Free-roaming horses in the culture and ecology of the Brittany Triangle and Nemiah Valley* (Unpublished doctoral dissertation). University of Waterloo, Ontario.
- Bradshaw, M., & Stratford, E. (2010). Qualitative research design and rigour. In I. Hay. (Ed.), *Qualitative Research Methods in Human Geography* (3rd ed.) (pp. 69-80). South Melbourne, Victoria: Oxford University Press.
- Brand Act. (2000, c B-6). Retrieved from Canadian Legal Information Institute (CanLII) Federation of Law Societies of Canada website <http://www.canlii.org/en/>
- Brewer, G.D., & Clark, T.W. (1994). A policy sciences perspective: Improving implementation. In T.W. Clark, R.P. Reading., & A.C. Clarke (Eds.), *Endangered species recovery: Finding the lessons, improving the process* (pp. 391-413). Washington, DC: Island.
- Brook, R. K. (2009) Historical review of elk-agriculture conflicts in and around riding mountain national park, Manitoba, Canada. *Human-Wildlife Conflicts*, 3(1), 72-87.
- Burkhardt, J. W. (1996). Herbivory in the Intermountain West: An overview of evolutionary history. Historic cultural impacts and lessons from the past. Station Bulletin 58, Idaho Forest, Wildlife, and Range Experiment Station.
- Bull J. R. (2010). Research with Aboriginal peoples: Authentic relationships as a precursor to ethical research. *Journal of Empirical Research on Human Research Ethics*, 5(4), 13-22.
- Burnett, R. (2005). *Disciplines in crisis: Transdisciplinary approaches in the arts, humanities and sciences*. Retrieved from Critical Approaches to Culture, Communications and Hypermedia <http://www.ecuad.ca/~rburnett/transdisciplinary.html>
- Canada Shipping Act (2001, c. 26). Retrieved from Government of Canada Justice Laws website http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._1465/page-1.html
- Card, K. (2010). *Assessing stakeholder interests: A strategy for best management practices of*

free-roaming horses, Chilcotin, British Columbia (Unpublished master's thesis).
University of Manitoba, Winnipeg, Manitoba.

Clark, T.W. (2001). Developing policy-oriented curricula for conservation biology: Professional and leadership education in the public interest. *Conservation Biology*, 15(1), 31-39.

Clark, T. W. (2002). *The policy process: A practical guide for natural resource professionals*. New Haven: Yale University Press.

Clark, T., Curlee, P., & Reading, R.P. (1996). Crafting effective solutions to the large carnivore conservation problem. *Conservation Biology*, 10(4), 940-948.

Clark, T. W., Reading, R. P., & Clarke, A. L. (1994). Synthesis. In T. W. Clark, R. P. Reading., & A.C. Clarke (Eds.), *Endangered species recovery: Finding the lessons, improving the process* (pp. 417-431). Washington, DC: Island.

Clark, T.W. & Rutherford, M.B. (2005). Coexisting with large carnivores: Orienting to the problems. In T.W. Clark, M.B. Rutherford, & D. Casey (Eds.), *Coexisting with large carnivores: Lessons from greater Yellowstone* (pp. 3-27). Washington, DC: Island Press.

Clarke, A. (2005). *Situational analysis: Grounded theory after the postmodern turn*. Thousand Oaks, California: Sage.

Cloke, P., Philo, C., & Sadler, D. (1991). *Approaching Human Geography: An Introduction to Contemporary Theoretical Debates*. M. Dear, D. Gregory, & N. Thrift (Eds.). New York, NY: Guilford Press.

Cope, M. (2010). Coding qualitative data. In I. Hay (Ed.), *Qualitative research methods in human geography* (3rd ed.) (pp. 281-294). South Melbourne, Victoria: Oxford University Press.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage publications Inc.

COSEWIC (2010). *COSEWIC guidelines on manipulated populations*. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Retrieved from COSEWIC guidelines on manipulated populations http://www.cosewic.gc.ca/eng/sct2/sct2_8_e.cfm).

Cronon, W. (1995). The trouble with Wilderness; or, getting back to the wrong nature. In W. Cronon (Ed.), *Uncommon Ground: Rethinking the Human Place in Nature* (pp. 69-90). New York, NY: W. W. Norton & Company.

- Cronon, W. (1992). Kennecott journey: The paths out of town. In W. Cronon, G. Miles, & J. Gitlin (Eds.), *Under an open sky: Rethinking America's western past* (pp. 28-51). New York, NY: W.W. Norton & Company.
- deFreitas, L., Morin, E., & Nicolescu, B. (2009, July 27). *Charter of Transdisciplinarity-International Center for Transdisciplinary Studies and Research*. Retrieved August 4, 2009 from International Center for Transdisciplinary Research <http://basarab.nicolescu.perso.sfr.fr/ciret/english/charten.htm>
- Dey, I. (1999) *Grounding Grounded Theory Guidelines for Qualitative Inquiry*. San Diego, CA: Academic Press.
- Dickinson, D. (2009). *Caught in the spin: The wild horses of C.F.B Suffield*. Calgary: Rain Cloud Publishing.
- Dowling, R. (2010). Power, subjectivity, and ethics in qualitative research. In I. Hay. (Ed.), *Qualitative research methods in human geography* (3rd ed.) (pp. 26-39). South Melbourne, Victoria: Oxford University Press.
- Editors, (2010). *Conservative vs. Liberal Beliefs*. Retrieved from <http://www.studentnewsdaily.com/conservative-vs-liberal-beliefs/>
- England, K. V. L. (1994). Getting personal: Reflexivity, positionality, and feminist research. *Professional Geographer*, 46(1), 80-89.
- Farnum, J., Hall, T., & Kruger, L. E. (2005, November). *US Forest Service*. Retrieved from Sense of Place In Natural Resource Recreation and Tourism: An Evaluation and Assessment of Reserach Findings http://www.fs.fed.us/pnw/pubs/pnw_gtr660.pdf
- Feddema-Leonard, S. (2007). *People and peaks of Willmore Wilderness park: 1800s to mid-1900s*. E. Cheverie (Ed.), Winnipeg, Manitoba: Willmore Wilderness Foundation & Whitefox Circle Inc.
- Feddema-Leonard, S. (Director and Producer). (2012). *Wildie* [Motion picture documentary]. Canada: People & Peaks Productions.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fisheries Act, Maritime Provinces Fishery Regulations. (1991, SOR/93-55, C1, S.12). Retrieved from Canadian Legal Information Institute (CanLII) Federation of Law Societies of Canada website <http://www.canlii.org/en/>
- Flannery, T. (2001). The eternal frontier. An ecological history of North America and its

- peoples. New York: Grove Press.
- Friends of Sable Island Society: A non-profit organization dedicated to the preservation of Sable Island. (2012). *A brief History of Sable Island*. Nova Scotia. Retrieved from <http://sableislandfriends.ca/?p=148>
- Friends of the Nemaiah Valley. (n.d.). *Wild Horses*. Victoria, British Columbia. Retrieved from <http://www.fonv.ca/wildhorses/>
- Galileo Educational Network. (n.d.). *Wild and Free*. Retrieved from <http://www.galileonetwork.ca/wildandfree/>
- Gates C. C. (2014). What is a wild bison? A case study of plains bison conservation in Canada. In M. Melletti & J. Burton (Eds.), *Ecology, Evolution and Behaviour of Wild Cattle: Implications for Conservation*. (pp. 373-384). Cambridge University Press.
- Giddens, A. (1976). *New Rules of Sociological Method*. London: Hutchinson.
- Girard, T. L. (2012). *Habitat selection by feral horses in the Alberta foothills* (Unpublished master's thesis). University of Alberta, Edmonton, Alberta.
- Government of Manitoba (1997). *Education, citizenship and youth: Curricular connections*. Retrieved May 10, 2009 from Manitoba, Education and Literacy website <http://www.edu.gov.mb.ca/k12/docs/support/currconn/types.html>
- Government of Saskatchewan. (2009). *An Act to protect the Wild Ponies of the Bronson Forest*. Bill No. 606. Regina: Queen's Printer. Retrieved from the government of Saskatchewan website <http://qp.gov.sk.ca/documents/English/Statutes/P29-2.pdf>
- Griffith, D. (2006). Local Knowledge, multiple livelihoods, and the use of natural and social resources in North Carolina. In C. R. Menzies (Ed.), *Traditional ecological knowledge and natural resource management*. Lincoln, NE: University of Nebraska Press.
- Guthrie, R. D. (2003). Rapid body size decline in Alaskan Pleistocene horses before Extinction. *Nature*, 426, 169-171.
- Harre, R. (1986). *Varieties of Realism*. Blackwell: Oxford.
- Harrison, S., Massey, D., Richards, K., Magilligan, F., Thrift, N., & Bender, B. (2004). Thinking across the divide: perspectives on the conversations between physical and human geography. *Area*, 36 (4), 435-442.
- Hay, I. (2010). *Qualitative Research Methods in Human Geography*. Toronto: Oxford University Press.

- Haynes, G. (2009). *American Megafaunal Extinctions at the end of the Pleistocene*. Reno, NV: Springer.
- Head, B., & Alford, J. (2008). Wicked problems: The implications for public management. *International research society for public management*, 12th Annual Conference. Brisbane, 26-28. Retrieved from <http://polsis.uq.edu.au/apsa2008/Refereed-papers/Head.pdf>
- Heikkinen, H.I., Moilanen, O., Nuttall, M. & Sarkki, S. (2011). Managing predators, managing reindeer: Contested conceptions of predator policies in Finland's southeast reindeer herding area. *Polar Record*, 47, 218-230. doi:10.1017/S0032247410000513.
- Henderson, B. (n.d.). WHOAS: The Wild Horses of Alberta Society. Retrieved from <http://www.wildhorsesofalberta.com>
- Henderson, C. (1991, February 1). *The Aboriginal North American Horse: In support of senate bill 2278 (North Dakota)*. Unpublished statement of Claire Henderson, History Department, Laval University, Quebec City, Quebec, Canada.
- Howitt, R., & Stevens, S. (2010). Cross cultural research: Ethics, methods, and relationships. In I. Hay. (Ed.), *Qualitative research methods in human geography (3rd ed.)* (pp. 40-68). South Melbourne, Victoria: Oxford University Press.
- Hubert, M. L., & Klein, J. L. (2007). *Mustang: Wild horse of the west*. C. Delprat, S. Cattaneo, C. Beaucourt & A. Codin (Eds.). Richmond Hill, Ontario: Firefly books Ltd.
- Hunsberger, C. (2004). *Exploring links between citizen environmental monitoring and decision making: Three Canadian Examples* (Unpublished doctoral dissertation). University of Waterloo, Ontario.
- Irving, D. (2001). *The impacts of horse grazing on conifer regeneration in west-central Alberta* (Unpublished doctoral dissertation). University of Alberta, Alberta.
- Isenberg, A. (2000). *The destruction of the bison: An environmental history, 1750-1920*. Cambridge: Cambridge University Press.
- IUCN/SSC (2013). *Guidelines for Reintroductions and Other Conservation Translocations*. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission.
- Jansen, T., Forster, P., Levine, M. A., Oelke, H., Hurles, M., Renfrew, C., Weber, J., & Olek, K. (2002). Proceedings of the National Academy of Sciences of the United States of

- America (PNAS): *Mitochondrial DNA and the origins of the domestic horse*, 99 (16) doi: 10905-10910.
- Kelekna, P. (2009, June). The politico-economic impact of the horse on old world cultures: An overview. *Sino-Platonic Papers*, 190, 1-31. Retrieved from www.sino-platonic.org/complete/spp190_horse_old_world.pdf
- Kelekna, P. (2009). *The Horse in Human History*. New York, NY: Cambridge University Press.
- Kellert, S. R. (1994). A Sociological Perspective: Valuation, Socioeconomic, and Organizational Factors. In T.W. Clark, R.P. Reading & A.L. Clarke (Eds.), *Endangered species recovery: Finding the lessons, improving the process*. (p. 371-389). Washington, DC: Island Press.
- Kellert, S.R. (1985). Public Perceptions of Predators, Particularly the Wolf and Coyote. *Biological Conservation*, 31, 167-189.
- Kellert, S. (1996). *The value of life: Biological diversity and human society*. Washington, DC: Island Press.
- Kessel, F., & Rosenfield, P. (2008). Toward transdisciplinary research: Historical and contemporary perspectives. *American Journal of Preventative Medicine*, 35 (2S), 225-234.
- Kidner, D. W. (2000). Fabricating nature: A critique of the social construction of nature. *Environment Ethics*, 22(4), 339-357.
- Kirkpatrick, J. F., and P. M. Fazio. (2010). *Wild horses as native North American wildlife*. Billings, MT: The Science and Conservation Center. Retrieved from <https://awionline.org/content/wild-horses-native-north-american-wildlife>
- Kooyman, B., Hills, L.V., McNeil, P., & Tolman, S. (2006). Late Pleistocene horse hunting at the Wally's beach site (DhPg-8), Canada. *American Antiquity*, 71(1), 101-121.
- Kooyman, B., Newman, M.E., Cluney, C., Lobb, M., Tolman, S., McNeil, P., & Hills, L.V. (2001). Identification of horse exploitation by clovis hunters based on protein analysis. *American Antiquity* 66(4), 686-691.
- Lachapelle, P. R., & McCool, S. F. (2005). Exploring the concept of "ownership" in natural resource planning. *Society and Natural Resources*, 18, 279-285.
- Lawrence, R. J. & Despres, C. (2004). Introduction. *Futures*, 36, 397-405.

- Lazarus, R. J. (2009). Super wicked problems and climate change: Restraining the present to liberate the future. *Cornell Law Review*, 94, 1153-1234.
- Leonard, B. (2013). Willmore Wilderness Foundation. *Grizzly Bear Survey*. Retrieved from Willmore Wilderness website http://www.willmorewilderness.com/page_folder/grizzly_survey.html
- Levin, K., Cashore, B., Bernstein, S. & Ault, G. (2012). Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy Science*, 45, 123-152.
- Livestock Identification and Brand Inspection Act. (2000, c. L-16). Retrieved from Canadian Legal Information Institute (CanLII) Federation of Law Societies of Canada website <http://www.canlii.org/en/>
- Lewis, A. & Smith, D. (1993). Defining higher order thinking. *Theory into Practice*, 32(3), 131-137.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic Inquiry*. Beverley Hills, CA: Sage.
- Linklater, W. L., Stafford, K. J., Minot, E. O., & Cameron, E. Z. (2002). Researching feral horse ecology and behavior: Turning political debate into opportunity. *Wildlife Society Bulletin*, 30(2), 644-650.
- Louis, R. P. (2007). Can you hear us now? Voices from the margin. *Geographical Research*, 45(2), 130-139.
- Lucas, Z. (2004). *Sable Island Green Horse Society: Sable Island horses*. Retrieved from: <http://www.greenhorsesociety.com>
- Luks, F., & Siebenhuner, B. (2007). Transdisciplinarity for social learning? The contribution of the German socio-ecological research initiative to sustainability governance. *Ecological Economics*, 63, 418-426.
- Luis, C., Bastos-Silveira, E., Cothran, G., & do Mar Oom, M. (2006). Iberian origins of new world horse breeds. *Journal of Heredity* 97(2), 107-113.
- MacPhee, D. E. (Ed.). (1999). *Extinctions in near time: Causes, contexts, and consequences*. New York, NY: American Museum of Natural History.
- Madden, F. (2004). Creating coexistence between humans and wildlife: Global perspectives on local efforts to address human-wildlife conflict. *Human Dimensions of Wildlife* 9, 247-257.

- Management (n.d.) . In *Google dictionary*. Retrieved from google
http://www.google.ca/search?client=safari&rls=en&q=management+define&ie=UTF-8&oe=UTF-8&redir_esc=&ei=-S25Ud7-EYqFiALohYDIAw
- Manfredo, M. J. (2008). *Who cares about wildlife: Social science concepts for exploring human-wildlife relationships and conservation issues*. New York, NY: Springer.
- Manfredo, M. J., Teel, T. L., & Zinn, H. C. (2009). Understanding Global Values toward wildlife. In M.J. Manfredo, J.J. Vaske, P.J. Brown, D.J. Decker, & E.A. Duke (Eds.), *Wildlife and society: The science of human dimensions* (pp. 31-43). Washington, DC: Island Press.
- Mansvelt, J., & Berg, L. D. (2010). Writing qualitative geographies, constructing geographical knowledges. In I. Hay. (Ed.), *Qualitative research methods in human geography* (3rd ed.) (pp. 333-355). South Melbourne, Victoria: Oxford University Press.
- Martin, P. S. (2005). *Twilight of the mammoths: Ice age extinctions and the rewilding of America*. Berkeley, CA: University of California Press.
- Massey, D. (1999). Space-time, 'science' and the relationship between physical geography and human geography. *Transactions of the Institute of British Geographers*, 24(3), 261-276.
- Mathar, T. (2008, May) Making a mess with situational analysis?. *FQS Forum: Qualitative Social Research*, 9(2), Art. 4. Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/432/934#g32>
- Menzies, C. R., & Butler, C. (2006). Understanding ecological knowledge. In C. R. Menzies (Ed.), *Traditional ecological knowledge and natural resource management* (pp. 1-17). Lincoln: University of Nebraska Press.
- Métis Nation of Alberta. (2007). *Definition of Métis*. Retrieved from Alberta Métis website <http://www.albertametis.com/MNAHome/MNA2.aspx>
- Migratory Birds Convention Act (1994, C.22). Retrieved from Canadian Legal Information Institute (CanLII) Federation of Law Societies of Canada website
<http://www.canlii.org/ca/sta/m-7.01/whole.html>
- Mitchell, J. C. (1983). Case and situation analysis. *The sociological review*, 31, 187-211.
- Montague, A. (2010). *The Canadian Horse: The fascinating story of Canada's national breed*. Toronto, Ontario: James Lorimer & Company Ltd.
- Nadasdy, P. (2006). The case of the missing sheep: Time, space and the politics of "trust"

- in co-management practice. In C. R. Menzies (Ed.), *Traditional ecological knowledge and natural resource management*. Lincoln, NE: University of Nebraska Press.
- Nadasdy, P. (1999). The Politics of TEK: Power and the "integration" of knowledge. *Arctic Anthropology*, 36(1/2), 1-18.
- National Horse of Canada Act (2002, c.11, N-10.7). Retrieved from Canadian Legal Information Institute (CanLII) Federation of Law Societies of Canada website <http://www.canlii.org/en/>
- Neumann, R. P. (2005). *Making political ecology*. London, UK: Hodder Arnold.
- Newell, W. H. (2001). Reply to the respondents to "A Theory of Interdisciplinary Studies". *Issues of Integrative Studies*, 19, 137-148.
- Newfoundland Labrador Canada: Department of Natural Resources. (2014). *Newfoundland Pony*. Retrieved from Newfoundland Labrador Canada website http://www.nr.gov.nl.ca/nr/agrifoods/animal/livestock/nl_pony.html
- Nicolescu, B. (1999, April). The transdisciplinary evolution of learning. Retrieved from Learning Development Institute website http://www.learndev.org/dl/nicolescu_f.pdf
- Nicolescu, B. (2008). In Vitro and In Vivo knowledge methodology of transdisciplinarity. In B. Nicolescu (Ed.), *Transdisciplinary Theory and Practice* (pp. 1-21). New Jersey: Hampton Press, Inc.
- Notzke, C. (2013). An exploration into political ecology and nonhuman agency: The case of the wild horse in western Canada. *The Canadian Geographer*, 57(4), 389–412.
- Notzke, C. (2012). *The Wild Horse-Alberta's Heritage Animal: Position Paper in support of a bill declaring Alberta's wild horses a provincial heritage animal with associated protection*. Unpublished manuscript, Faculty of Management, University of Lethbridge, Lethbridge, Canada.
- Notzke, C. (2010). Western Canada's wild horses: The struggle for legitimacy. *Nature Alberta*, 40(1), 18–21.
- Notzke, C. (2014). Wild horse-based tourism as wildlife tourism: The wild horse as the other. *Current Issues in Tourism*. 1-25. Retrieved from <http://dx.doi.org/10.1080/13683500.2014.897688>
- Nowotny, H. (2003, May 1). *Rethinking Interdisciplinarity*. Retrieved April 4, 2009 from Interdisciplines website <http://www.interdisciplines.org/interdisciplinarity/papers/5>

- Oelke, H. (1997). *Born survivors on the eve of extinction*. Kansas: Premier Publishing Equine.
- Ostermann-Kelm, S., Atwill, E.R., Rubin, E. S., Jorgensen, M. C., & Boyce, W. M. (2008). Interactions Between Feral Horses and Desert Bighorn Sheep at Water. *Journal of Mammalogy*, 89(2), 459-466.
- Pohl, C. (2005). Transdisciplinary collaboration in environmental research. *Futures*, 37, 1159-1178.
- Pohl, C. (2008). From science to policy through transdisciplinary research. *Environmental Science & Policy*, 11, 46-53.
- Punch, M. (1994). The politics and ethics of fieldwork. In N.K. Denzin, & Y.S. Lincoln. (Eds.), *Handbook of qualitative research* (pp. 83-97). Thousand Oaks, CA: Sage Publications.
- Quinlan, T., & Scogings, P. (2004). Why bio-physical and social scientists can speak the same language when addressing Sustainable Development. *Environmental Science & Policy*, 7, 537-546.
- Reed, C. M. (2008). Wild horse protection policies: Environmental and animal ethics in transition. *International Journal of Public Administration*, 31(3), 277-286.
- Rikoon, J. S. (2006). Wild horses and the political ecology of nature restoration in the Missouri Ozarks. *Geoforum* 37, 200-211.
- Rikoon, J. S. (2009). Wild horses and the political ecology of nature restoration in the Missouri Ozarks. In L. King & D. McCarthy (Eds.), *Environmental Sociology* (2nd ed.) (pp. 111-127). Maryland: Rowman & Littlefield Publishers, Inc.
- Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4, 155-169.
- Rocky Mountain Traditional Research Institute. (n.d.). *Mountain Metis*. Retrieved from Mountain Metis website <http://www.mountainmetis.com/index.html>
- Roe, F. G. (1955). *The Indian and the horse* (3rd ed.). Oklahoma: The University of Oklahoma Press.
- Russell, W., Wickson, F., & Carew, A. (2008). Transdisciplinarity: Context, contradictions and capacity. *Futures*, 40, 460-472.

- Rutherford, M. B., & Clark, T. W. (2005). Coexisting with large carnivores: Lessons from the greater Yellowstone. In T. W. Clark, M. B. Rutherford & D. Casey (Eds.), *Coexisting with large carnivores* (pp. 254-270). Washington, DC: Island Press.
- Ryden, H. (1999). *Wild horses I have known*. New York, NY: Clarion Books.
- Salter, R. E., & Hudson, R. J. (1978). Distribution and management of feral horses in western Canada. *Rangeman's Journal*, 5(6), 190-192.
- Salter, R. E. & Hudson, R. J. (1979). Feeding ecology of feral horses in western Alberta. *Journal of Range Management*, 32(3), 221-225.
- Salter, R. E. & Hudson, R. J. (1980). Range relationships of feral horses with wild ungulates and cattle in western Alberta. *Journal of Range Management*, 33(4), 266-271.
- Salter, R. E. & Hudson, R. J. (1982). Social organization of feral horses in western Canada. *Applied Animal Ethology*, 8, 207-223.
- Salter, R. E. & Pluth, D. J. (1980). Determinants of mineral lick utilization by feral horses. *Northwest Science*, 54, 109-118.
- Sayer, A. (1984). *Method in Social Science: A Realist Approach*. London: Hutchinson.
- Sayer, A. (1992). *Method in Social Science: A Realist Approach* (2nd ed.). London: Hutchinson.
- Sheldrake, R. (2012). *Science Set Free: 10 Paths to New Discovery*. New York, NY: Random House.
- Simpson, G. G. (1951). *Horses*. New York, NY: Oxford University Press.
- Soanes, C., & Harris, J. (Eds.). (2005). *Compact Oxford English Dictionary of Current English* (3rd ed.). Oxford University Press.
- Strauss, A., & Corbin, J. (1998). *The basics of qualitative analysis: Grounded theory procedures and techniques* (2nd ed). Thousand Oaks, CA: Sage publications Inc.
- Stray Animals Act. (2010, c. S-20). Retrieved from Province of Alberta website <http://www.qp.alberta.ca>
- Symanski, R. (1994). Contested realities: Feral horses in Outback Australia. *Annals of the Association of American Geographers* 84(2), 251-269.
- The Newfoundland Pony Society (n.d.) Retrieved from <http://newfoundlandpony.com>

- Thompson, L. (1997-2011). *Place Names of Alberta*. Retrieved from <http://ab.canadagenweb.org/alberta-info-placenames.html>
- Thrift, N. (2002). The future of Geography. *Geoforum*, 33, 291-298.
- Treves, A., Wallace, R. B., Naughton-Treves, L & Morales, A. (2006). Co-Managing human-wildlife conflicts: A review. *Human Dimensions of Wildlife*, 11, 303-396.
- Turner, J. W. Jr., & Morrison, M. L. (2001). Influence of predation by mountain lions on numbers and survivorship of a feral horse population. *The Southwestern Naturalist*, 46(2), 183-190.
- Turner, J. W. Jr., Wolfe, M. L., & Kirkpatrick, J. F. (1992). Seasonal mountain lion predation on a feral horse population. *Canadian Journal of Zoology*, 70, 929-934.
- Turnbull, D. (1997). Reframing science and other local knowledge traditions. *Futures*, 29(6), 551-562.
- UNESCO: Division of Philosophy and Ethics. (1998, May). *Transdisciplinarity: Stimulating synergies, integrating knowledge*. Retrieved May 18, 2009 from UNESCO documents and publications <http://unesdoc.unesco.org/images/0011/001146/114694eo.pdf>
- US Congress. (1971). Wild Free-Roaming Horses and Burros Act (Public Law 92–195). 16 USC 1331–1340. Retrieved from BLM, National Wild Horse and Burro Program website <http://www.wildhorseandburro.blm.gov/92-195.htm>
- US Department of the Interior, Bureau of Land Management BLM. (2009). Laws, Regulations, Policies, Court decisions. Retrieved from BLM website <http://www.blm.gov/wo/st/en/info/regulations.html>
- US Department of the Interior, Bureau of Land Management (BLM). (2014). Wild Horses and Burros: History of the Program. Retrieved from BLM website http://www.blm.gov/wo/st/en/prog/whbprogram/history_and_facts/history_of_the_program.html
- US Government Accountability Office (GAO). (2008). Statement of the Bureau of Land Management (BLM) on the Government accountability office's report "Effective long-term options needed to manage unadoptable wild horses". Retrieved from BLM website <http://www.blm.gov/ca/st/en/info/newsroom/2008/november/wohorses.html>

- Van Duyne, C., Ras, E., De Vos, A. E. W., Boer, W. F., Henkens, R. J. H., & Usukhjargal, D. (2009). Wolf Predation among reintroduced Przewalski horses in Hustai National Park, Mongolia. *Journal of Wildlife Management*, 73(6), 836-843.
- Vaske, J. J., & Donnelly, M. (1999). A value-attitude-behavior model predicting wildland preservation voting intentions. *Society and Natural Resources*, 12(6), 523-537.
- Watters J. K., & Biernacki, P. (1989) Targeted sampling. *Social Problems*, 36(4), 416-430.
- Wild Horses of Alberta Society (WHOAS). (2004, January, 26). *Horse Capture Regulations Review*. Alberta: Bob Henderson.
- Willig, C. (2001). *Introducing qualitative research in psychology: Adventures in theory and method*. Philadelphia, PA: Open University Press.
- Wilmot, J. & Clark, T. W. (2005). Wolf Restoration: A battle in the war over the west. In T. W. Clark, M. B. Rutherford & D. Casey (Eds.), *Coexisting with large carnivores* (pp. 138-173). Washington, DC: Island Press.
- Winchester, H. P. M., & Rofo, M. W. (2010). Qualitative research and its place in human geography. In I. Hay. (Ed.), *Qualitative research methods in human geography* (3rd ed.) (pp. 3-25). South Melbourne, Victoria: Oxford University Press.
- Yin, R. K. (1989). *Case study research: Design and methods*. Newbury Park, CA: Sage Publications.
- Zinn, H. C., Manfredo, M.J., & Barro, S.C. (2002). Patterns of wildlife value orientations in hunters' families. *Human Dimensions of Wildlife* 7, 147-162.
- Zeleny, M. (1987). Management support systems: Towards integrated knowledge management. *Human Systems Management*, 7, 59-70.

APPENDICES

Appendix 1: Interview Guide

Landowners/land users/industry

A. Information regarding free roaming horses

1. a) Do you own horses?

b) Describe any recreational experiences that you have had or have with horses?

2. a) Have you seen FRH?

b) Have you come in contact with free roaming horses?

i) When? ii) Where? iii) How often? c) (if affirmative) About how many horses were there at the time that you saw them?

PROVIDE MAP (Post it and sticker arrows)

Please mark the area where you have seen the horses on the map and indicate the approximate date, time of day, how many there were and any other information that you recall about the sighting.

3. a) How long have you been aware that free roaming horses are in Alberta?

4. a) (if Affirmative on q3) Have you spoken to anyone who has an interest in FRH?

b) Who? _____

c) What aspect exactly were they interested in?

d) Have you read any newspaper or magazine articles about FRH? e) What were they about?

f) How did you feel about the information you read? g) Have you heard of any research being done on FRH? h) Who was doing it and why? _____

5. a) Have you discussed free roaming horses and issues surrounding them with anyone? b) (if affirmative) With who? c) (if affirmative) Specifically, what sorts of things did you talk about? _____

B. Perceived problems associated with free ranging horses

1. Describe the main problems associated with free roaming horses in Alberta.

Checklist

*compete for grass with
cattle
cause vehicle collisions
pollute water bodies*

*destroy
spiritual/recreational/private land
male stallions take mares
from pastures
carry and transmit disease*

*eat forage that could be for
cattle thereby are
economically unviable
compete for forage with
wildlife
trample valuable plants*

PROVIDE CARDS WITH PROBLEMS *Ask participants to arrange the problems as least problematic or most problematic. Discuss generated ideas.*

2. a) What is the greatest problem that FRH cause?

b) If you had to attach a price tag on the damage how much do you think it would cost? Explain_____

3. a) Do you think free roaming horses infringe on existing wildlife? b) Do you think FRH impact the land in any way?

4. The AB government defines the FR horses as feral/stray animals which once depended on people for survival and escaped or were released at some point and reverted to a wild state. The government does not consider that FRH are wild because they were introduced species to the area. Wild means living naturally without being tamed or domesticated by people. 'Wild' (without human interference) horses inhabited N. America 12 000 years ago. Before they disappeared from N. America, ancestors of the horse populated other areas of the world (Europe, Asia, Africa). The Spanish brought horses back to N. America during colonization. Horses were then released or escaped and survived for =or >100 years in the natural environment.

a) Do you think the free roaming horses are feral/stray or wild?_____

b) Do you agree with their current feral/stray status? c) Why or why not? _____

d) Why do you think the government classifies the horses as feral/stray?_____

First ask participants the following: Please give some reasons why you feel FRH are wild/feral?_____

GIVE RESPONDENT CARDS – ASK TO RANK IN ORDER OF IMPORTANCE AND TO COMMENT OR ADD TO THE EXISTING LIST - DISCUSS *(the cards will have the following statements written on them stray/feral because they escaped from domesticated stock, people introduced them to North America, are not wild animals, are not native to this area, are introduced by people. Wild because they originated on the North American continent, have been wild for more than one generation, can survive on their own, add to biodiversity of the species in the area, after many generations play a role in the ecosystem)*

5. Legally free roaming horses could be captured (with permits) every year. The government estimates that there are 200-800 free roaming horses in the designated horse capture area.

a) Do you think there are too few, too many or just the right number of free roaming horses in the area?

b) Why/why not?_____

c) What would be an appropriate number? Why?

d) Do you see any advantages to having FRH on the landscape?_____

C. Questions regarding management of free ranging horses

1. a) Do you think the horses should be treated/managed as feral/stray or wild animals? b) Why?

c) What do you think it means to manage the FRH as feral vs. wild? (Differences in management, techniques used etc.)

2. a) What have you heard or read about the current management/policies of FRH?

b) What do you think will happen to the horses in the future if current policies and management practices remain the same? *(for example free roaming horses are not considered wild or protected as such, horses are captured every year)?*

c) Should the horses continue to be managed as feral animals or would you support changes? d) (if affirmative) What kind of changes would you support? e) How could these changes be implemented?

3. a) Have you had any input into management of the horses? b) (if affirmative) What was it?

4. a) What management goals or techniques would you

suggest_____

aerial shooting

poisoning

trapping

rounding up horses and

selling them

using barriers such as

fences to contain horses in

a specific area

implement birth control

methods

develop parks/areas where

horses can live

PROVIDE CARDS FOR RESPONDENTS TO ARRANGE IN ORDER OF IMPORTANCE -
ADD TO OR CHANGE THE LIST – DISCUSS

5. a) How could decisions or actions regarding the horses be improved? Note: The following may be categories into which I classify responses: more involvement from landowners, more government involvement, less government involvement etc.

6. a) What should/could? be the goal(s) for free roaming horse management? *Seek responses first then offer ideas such as: Increase numbers, decrease numbers, monitor numbers, capture all horses, leave horses alone, designate specific areas for horses etc.*

b) have any of these goals been achieved? _____

(if affirmative) c) Which ones and how? d) (if partially affirmative) Which ones and how? _____

e) (if No) How should we achieve these goals (or the goals you suggested)? _____

7. a) Do you have any additional comments or suggestions concerning free roaming horses and their management?

A. Questions focused on managers (those in formal leadership and decision making positions)

1. a) who is involved currently in managing FRH? _____

b) Who should be involved in managing the horses?

c) Who do free roaming horses affect?

2. a) Who should be responsible for the horses (government, protection groups, landowners etc.)? b) How and in what capacity? c) What would it take to change policy?

3. a) I am aware that the area is used by those with grazing permits, for recreation, and by the forestry industry, are you aware of any other uses of the area?

4. a) Have you come across any historical documentation (family history publications or diaries) dealing with the horses or any other references that may shed some light on these animals?

5. a) Are you aware of studies or data that may further inform this research? b) Are you aware of people who may frequently come in contact with FRH in the area?

6. a) I have the land ownership maps of owned and leased land, are you aware of other maps or other relevant documents related to land use?

Indigenous Elders, settler elders, those with historic information

A. Information regarding free roaming horses and historical significance

1. a) Do you own horses? b) Does the Reserve have horses on it? c) (if affirmative) Do they belong to someone specific, are they communally owned or are they free to roam?

2. Describe any experience that you have had or have with FRH?

3. a) Have you seen FRH?

b) Have you come in contact with free roaming horses?

i) When? ii) Where? iii) How often? c) (if affirmative) About how many horses were there at the time that you saw them?

PROVIDE MAP (Post it and sticker arrows)

Please mark the area where you have seen the horses on the map and indicate the approximate date, time of day, how many there were and any other information that you recall about the sighting.

4. a) How long have you been aware that free roaming horses are in Alberta or on the Reserve?

5. a) Have you heard of any conflicts (-) from community members regarding FRH? b) Have you heard of any action (- or +) taken by the community regarding free roaming horses?

6. a) Have you discussed free roaming horses and issues surrounding them with anyone? b) (if affirmative) With who? c) (if affirmative) Specifically, what did you talk about? d) How long ago?

7. a) Describe the importance of horses to the Blackfoot/Stoney (other) people?

b) How were horses used in the past?

c) How are they used now?

d) Do they or did they have any significance in ceremonies?

e) What parts of the horse, if any, were used in ceremonies, social gatherings, spiritual exercises etc. *e.g. horse hair*?

f) Were horses painted in the past? g) (if affirmative) Describe the technique, what it looked like, how it was done?

h) Are horses painted now? Note: want this level of detail to learn if there are any uniquely cultural uses for FRH in the specific research area.

8. a) Do you think free roaming horses are historically significant to the Blackfoot people? i) Why? ii) How?

9. a) How do you think the horse benefited/benefit the Blackfoot people? and what about today?
b) Are the FRH still of benefit? In what ways?

B. Perceived problems associated with free ranging horses

1. a) Are there problems associated with free roaming horses on the reserve? b) What are they?

Checklist (check off by numbering in order stated)

<i>compete for grass with cattle</i>	<i>cause vehicle collisions</i>	<i>pollute water bodies</i>
<i>destroy spiritual/recreational/private land</i>	<i>carry and transmit disease</i>	<i>compete for forage with wildlife</i>
<i>male stallions take mares from pastures</i>	<i>eat forage that could be for cattle thereby are economically unviable</i>	<i>trample valuable plants</i>

PROVIDE CARDS WITH PROBLEMS Ask participants to arrange the problems as least problematic or most problematic. Discuss generated ideas.

2. a) Do you think that the horses belong on reserves?

b) Do you think FRH belong off the reserve?

c) Do you think that the horses damage the land/area in any way?

3. a) Do you think free roaming horses infringe on existing wildlife? b) Do you think FRH impact the land in any way?

4. The AB government defines the FR horses as feral/stray animals which once depended on people for survival and escaped or were released at some point and reverted to a wild state. The government does not consider that FRH are wild because they were introduced species to the area. Wild means living naturally without being tamed or domesticated by people. 'Wild' (without human interference) horses inhabited N. America 12 000 years ago. Before they disappeared from N. America, ancestors of the horse populated other areas of the world (Europe, Asia, Africa). The Spanish brought horses back to N. America during colonization. Horses were then released or escaped and survived for =or >100 years in the natural environment.

a) Do you think the free roaming horses are feral/stray or

wild? _____

b) Do you agree with their current feral/stray status? c) Why or why not? _____

d) Why do you think the government classifies the horses as feral/stray? _____

First ask participants the following: Please give some reasons why you feel FRH are wild/feral? _____

GIVE RESPONDENT CARDS – ASK TO RANK IN ORDER OF IMPORTANCE AND TO COMMENT OR ADD TO THE EXISTING LIST - DISCUSS (*the cards will have the following*

statements written on them stray/feral because they escaped from domesticated stock, people introduced them to North America, are not wild animals, are not native to this area, are introduced by people. Wild because they originated on the North American continent, have been wild for more than one generation, can survive on their own, add to biodiversity of the species in the area, after many generations play a role in the ecosystem)

5. Legally free roaming horses could be captured (with permits) every year. The government estimates that there are 200-800 free roaming horses in the designated horse capture area.
a) Do you think there are too few, too many or just the right number of free roaming horses in the area?

b) Why/why not? _____

c) What would be an appropriate number? Why? _____

d) Do you see any advantages to having FRH on the landscape? _____

C. Questions regarding management of free ranging horses

1. a) Do you think the horses should be treated/managed as feral/stray or wild animals? b) Why?

c) What do you think it means to manage the FRH as feral vs. wild? (Differences in management, techniques used etc.)

d) Are there any special management policies regarding the horses on the reserve right now? e) In the past?

2. a) What have you heard or read about the current management/policies of FRH?

b) What do you think will happen to the horses in the future if current policies and management practices remain the same? *(for example free roaming horses are not considered wild or protected as such, horses are captured every year)?*

c) Should the horses continue to be managed as feral animals or would you support changes? d) (if affirmative) What kind of changes would you support? e) How could these changes be implemented?

d) (if affirmative) What kind of changes would you support? e) How could these changes be implemented?

3. a) Have you had any input into management of the horses? b) (if affirmative) What was it?

4. a) What management goals or techniques would you suggest_____

*aerial shooting
poisoning
trappingrounding up
horses and selling them*

*using barriers such as
fences to contain horses in
a specific area*

*implement birth control
methodsdevelop
parks/areas here horses
can live*

PROVIDE CARDS FOR RESPONDENTS TO ARRANGE IN ORDER OF IMPORTANCE -
ADD TO OR CHANGE THE LIST - DISCUSS

5. a) How could decisions or actions regarding the horses be improved? Note: The following may be categories into which I classify responses: more involvement from landowners, more government involvement, less government involvement etc.

6. a) What should/could? be the goal(s) for free roaming horse management? *Seek responses first then offer ideas such as: Increase numbers, decrease numbers, monitor numbers, capture all horses, leave horses alone, designate specific areas for horses etc.*

b) have any of these goals been achieved?

(if affirmative)c) Which ones and how? d) (if partially affirmative) Which ones and how? _____

e) (if No) How should we achieve these goals (or the goals you suggested)? _____

7. a) Do you have any additional comments or suggestions concerning free roaming horses and their management?