THE GOVERNANCE OF WOLVES IN TRANSBOUNDARY REGIONS:

A TRIQUETROUS STUDY OF EPHEMERAL AGREEMENTS

TRANSCENDING SUB-NATIONAL AND NATIONAL BOUNDARIES

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A

THESIS

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ABSTRACT

Contradictory management objectives in adjacent jurisdictions can affect transboundary wolves and their associated socio-ecological systems. Elite interviews and case study methodology were used in this thesis to explore three transboundary wolf management agreements, their effectiveness, and their impacts on wolves, ecosystems and stakeholders. Separate agreements between the State of Alaska and: Yukon-Charley Rivers National Preserve, and Denali National Park and Preserve, and an agreement between Italy and Switzerland show that despite a diversity of socio-ecological contexts, approaches, and hierarchical level of actors, transboundary wolf agreements are prone to ephemerality. The ephemerality of these agreements appears to be due primarily to institutional path dependency, and to political tension between management entities. The impacts of these agreements and their cessation, on socio-ecological systems are limited by the agreements' limited scopes. The agreements do however figure incrementally into larger trends, especially including changes in rural and urban identities, and in large carnivore management discourse. I argue that a diversity of wolf management approaches across a landscape, and the inherent conflict between management entities preserves adaptive capacity by preventing one size fits all prescriptions based on incomplete knowledge. Assuming no acute state of emergency, incremental rather than transformational change is more equitable to diverse stakeholders; allowing public perception, policy, and scientific knowledge to shift concurrently. The cases also suggest that facilitating trans-entity conversation and coordination at multiple levels would support understanding, and increase the prevalence of creative agreements contributing to amenable, incremental change. Landscape Conservation Cooperatives are put forth as a potential platform or template for this facilitation.

To Cillian and Severin

TABLE OF CONTENTS

Page

Page

Page

LIST OF FIGURES

Page

List of Acronyms

ADFG: Alaska Department of Fish and Game

ANCSA: Alaska Native Claims Settlement Act

ANILCA: Alaska National Interest Lands Conservation Act

BLM: Bureau of Land Management (United States of America)

BOG: Alaska Board of Game

CBD: Convention on Biological Diversity (United Nations)

CITES: Convention on International Trade in Endangered Species (United Nations)

CoE: Council of Europe

DOI: Department of the Interior (United States of America)

EC: European Commission

ESA: Endangered Species Act (United States of America)

EU: European Union

FOEN: Federal Office for the Environment (Switzerland)

FWS: United States Fish and Wildlife Service

GMU: Game Management Unit (Alaska)

IUCN: International Union for the Conservation of Nature

IM: Intensive Management

ISPRA: Institute for Environmental Protection and Research (Italy)

KORA: Carnivore Ecology and Wildlife Management (Switzerland)

LCC: Landscape Conservation Cooperative

LCIE: Large Carnivore Initiative for Europe

MMoU: Master Memorandum of Understanding

NPS: National Park Service (United States of America)

NRC: National Research Council (United States of America)

RowAlps: Recovery of Wildlife in the Alps

SSC: Species Survival Commission (IUCN)

UN: United Nations

US: United States of America

WISO: Wild Ungulates and Society Platform (Alpine Convention)

WSL: Swiss Federal Institute for Forest, Snow and Landscape

WWF: World Wildlife Fund

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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

In the mid-2000s, I was living in Zurich, Switzerland. I spent virtually all of my free time in the Alps. The Alps deserve their romantic reputation. At lower altitudes, thousands of years of agriculture have manicured forests cleanly around pastures. Above the tree line, one encounters domestic sheep and goat herds on rocky and snowy terrain. Wild chamois appear and disappear on impossible inclines. Idyllic mountain villages speckle dramatic mountainous landscapes. In villages and cities pictures and place names connote the presence of wildlife prominently, including bears and wolves; however, large carnivores have been largely absent from the landscape for nearly two centuries. In recent decades, however, native wolves, bears and lynx, long extirpated, from the vast majority of the Alps, have begun to reappear. The first individual wolves began to reenter Switzerland from Italy in 1995, 174 years after the last known wild wolf was shot. The first wild bear of modern times was seen in Switzerland in 2005, 101 years after the last one was shot. Lynx were reintroduced in 1971 after having been extirpated 56 years earlier.

The nascent, natural recolonization by wolves of their former range has recurrently made front-page news. This media attention highlights the complex interplay between cultural values, the natural world, and politics. Environmental NGOs and many biologists celebrated the wolf's return, on the evening news. Many shepherds, other small-livestock breeders, and hunters prominently expressed the opposite reaction. Some opponents of the wolf's return continue to call for its re-extirpation. The vocal conflict between proponents and opponents of wolf recolonization captivated the public. Then I moved to Fairbanks, Alaska.

Fairbanks is a small city, by international standards, in Interior Alaska. It boasts impressive extremes in climate, and access to the vast wild areas of the Interior. 'Access' is a misnomer, actually. Villages and towns in the regions are generally small, far apart, and frequently inaccessible by road. The term 'pristine wilderness' more appropriately applies to Interior Alaska than most anywhere else. A full suite of native fauna complete the picture. Curiously, it seemed to me, Alaskans were having similar wolf-related conversations to those taking place in

Switzerland. In Alaska, proponents and opponents of wolf-control clashed in public forums. Opponents of wolf-control coined the dysphemism 'moose farm' to criticize the killing of wolves to boost prey numbers for hunters. Proponents of wolf-control often claimed 'wolf huggers' failed to understand wolf-control's virtues.

The Alps and Alaska have starkly different socio-ecological situations. Despite these differences, ideological and rhetorical themes such as the rural - urban divide, tradition, food, rights, and safety appear in large-carnivore-management discourse in both the Alps, and Alaska. In both regions, the conflict seemed to play out most vehemently around borders. This makes sense. Wolves do not care about jurisdictional divides; people do, though. Wolves as a flagship species and charismatic mega-fauna can drastically affect stakeholders (e.g. symbolically and emotionally, and practically by affecting hunting opportunities) and natural systems (e.g. by altering regional biodiversity, water quality). Due to these effects, transboundary wolves can confound attempts to meet contradictory management objectives on opposing sides of jurisdictional boundaries. Confoundedness can manifest into undesirably confrontational relationships between management agencies and/ or user-groups. Confoundedness can also characterize agreements over wolf management. Even when transboundary wolf management agreements do come about, they tend to be ephemeral.

In this thesis, I examine three transboundary wolf management agreements; how they were created, and ultimately what causes their ephemerality. I conclude that two factors cause these agreements to cease to function. First, agreement makers lack either commitment or the ability to commit to the agreement at their decision-making level. This inability to commit is a product of institutional priorities and hierarchies. Second, the agreements are unimportant in the context of larger issues. I discuss the impacts of the agreements and their short-lived-ness on: wolves, their ecoystems, and stakeholders. I discuss how these agreements contribute to the incremental evolution of trends. Finally, I discuss the challenges in creating lasting and/ or effective agreements, and I postulate potential ways forward.

Specifically, this thesis consists of three case studies exploring the governance of wolves in transboundary regions. The first case study examines wolf governance over subnational/ jurisdictional boundaries within the State of Alaska between Denali National Park and Preserve (Denali), and the State of Alaska. The second case study examines wolf governance over subnational/ jurisdictional boundaries within the State of Alaska between Yukon-Charley Rivers National Preserve (Yukon-Charley), and the State of Alaska. The third case study explores governance over Italian - Swiss national boundary in the Western Alps.

Large carnivores other than wolves (e.g. bears and lynx) also figure into large predator issues such as predator control, extirpation, and recolonization and reintroduction (Breitenmoser, 1998; Boertje, Keeck, & Paragi, 2010). However, for the sake of manageability, the focus of this study is solely on wolves. The extirpation of all large carnivores in the Western Alps case study area took place more-or-less simultaneously. Subsequently, Lynx have been reintroduced on a limited basis (Breitenmoser, 1998). Natural recolonization of the area by bears and wolves has taken place at different paces, following different patterns (Breitenmoser, 1998; Linnell, Salvatori, & Boitani, 2008). In all three case studies, the agreements that I examine focus on the governance of wolves; where other large carnivore species are addressed as part of an agreement, I have included that information.

1.2 Research Justification

1.2.1 Boundaries

Studying transboundary resource governance is important for a number of reasons. Individual resources are interrelated with ecosystems (Leopold, 1979); and ecosystems often, if not always, extend beyond political borders (López-Hoffman, Varady, Flessa, & Balvanera, 2012). Management actions on one side of a jurisdictional boundary can drastically affect natural resources on the other side. These effects can be to high profile resources, priority resources, and larger natural systems. These effects can be felt immediately and well beyond the jurisdictional border of a management entity; and can affect that neighboring entity's attempts to manage natural resources within its own jurisdiction.

Humans depend on these functioning natural systems, for example for ecosystem services such as food, and climate regulation (Chapin III, Folke, & Kofinas, Managing Ecosystems Sustainability: The Key Role of Resilience, 2009). Humans also value various aspects of the natural world for less tangible reasons (Woodgate & Redclift, 1998; Freyfogle E. , 2006). Though understandings and definitions of 'natural' vary widely (Freyfogle E. , 2006; Nankoong, 2008; Kleese, 2002), nature and our interactions with nature are valued consciously and subconsciously for spiritual, recreational, identity-related, existence value, and other reasons (Nankoong, 2008; Kleese, 2002; Reedy-Maschner, 2010; Anahita & Mix, 2006).

The history of territories, borders and the formation of states is long, complex and increasingly hazy as the perspective is extended back in time (Glyn, 2004). There have been wars and agreements over transboundary resources throughout history (Acemoglu, Golosov, Tsyvinski, & Yared, 2011) There have also been wars and agreements over borders themselves (Brotton, 2012). However, 'the grey area beyond the border' on maps seems to remain a common trope.

Land management entities face growing demands due to: increasingly complex and inclusive understandings of geophysical processes (Jacobson & Robertson, 2012); increased electronic media access leading to public scrutiny (Dryzek, Downes, Hunold, Schlossberg, & Hernes, 2003), sometimes by way of advocacy organizations (Dryzek, Downes, Hunold, Schlossberg, & Hernes, 2003); and political positioning to secure funding (Jacobson & Robertson, 2012). The intensity of these demands appears to require internal focus, and as a result may constrain efforts to coherently reach across borders. Another influence that may restrict cross border cooperation in resource management is path dependence. Path dependence is the influence of historical circumstances on existing organizations and their subsequent behavior. Path dependence can limit the ability of organizations to, as David James terms it, "stretch their mandates" (personal communication, May 2013).

Transboundary terrestrial resource governance agreements still seem relatively infrequent despite an increasing awareness of their potential importance (Jacobson & Robertson, 2012).

Beyond their quantity and scope, transboundary resource management agreements are often tenuous and/ or ineffective (Tanaka & Matsuoka, 2010; Bowman, Davies, & Ridgewell, 2010). There are a myriad of potential reasons for these limitations, many of which are illustrated in the three case studies this thesis explores. Some of the prominent limitations include:

- Lopsided repercussions of transboundary resource management (van der Linde, Oglethorpe, Sandwith, Snelson, & Tessema, 2001).
- Contradictory management objectives on opposite sides of a boundary (Lurman & Rabinowitch, 2007).
- Concerns over sovereignty (van der Linde, Oglethorpe, Sandwith, Snelson, & Tessema, 2001; Bowman, Davies, & Ridgewell, 2010).
- Political shifts over time on either or both sides of a border (Norman, 2012).
- The difficulty of enforcing transboundary agreements especially in an area where one entity has no jurisdiction (Bowman, Davies, & Ridgewell, 2010).

Yet despite these challenges it is important to note that cooperative transboundary resource governance is likely to become even more important. The importance of transboundary resource governance may be especially relevant in cases of shifting wildlife migration patterns and changes in ecoregions (Stephenson, Millar, & Cole, 2010).

As alluded to above, political borders can affect a resource such as a transboundary or migratory wildlife population (Forbes & Theberge, 1996). Two clear, non-wolf examples of this are anadromous fish such as salmon, and caribou. Both salmon and caribou are important human food resources, for calories and for cultural identity in the north. Given the shared responsibility for and value of transboundary salmon and caribou, it has been seen as advantageous for two governing entities to collaborate their management activities towards mutual goals. In the case of salmon and caribou, well established transboundary efforts do exist (e.g. Yukon River Panel, Porcupine Caribou Management Board).

Varied management approaches and goals may provide some adaptive capacity (Chapin III, Folke, & Kofinas, A Framework for Understanding Change, 2009). Across large, transboundary scales, overly cohesive or homogenous strategies and goals, if eventually found harmful could

endanger aspects of socio-ecological systems on a very large scale (Kofinas, Adaptive Co-Management in Social-Ecological Governance, 2009; Ostrom, 1990). In simpler terms, mistakes on a small scale are small, mistakes on a massive scale are massive.

1.2.2 WHY WOLVES?

In many ways, wolves are an ideal transboundary resource for study. Most importantly, they are often a transboundary resource, and can be so in many different ways. Wolves occupy large areas, regularly move great distances, and can quickly disperse and take up residence in previously unoccupied habitat. In some cases, wolves and wolf packs follow migratory ungulates across jurisdictional boundaries and through various management regimes (Forbes & Theberge, 1996; Mech & Boitani, Wolf Social Ecology, 2003). When a wolf pack's territory is bisected by a border, one unit is subject to multiple governing entities (Marrucco & McIntire, 2010). Young members of a pack can disperse up to 1200 kilometers (Provincia Autonoma Di Trento, 2012).

The habitats with which wolves interact often extend beyond single jurisdictional borders. Land and wildlife managers may regulate their portions of transboundary wolf habitats for varying purposes. Depending on the context, wolves may or may not benefit from management objectives related to forestry, development, or wilderness values, to name a few. Certain management regimes can directly and/ or indirectly either further enable or prevent wolf migration (Thurber, Peterson, Drummer, & Thomasma, 1994). Management actions that affect wolf migration the most include liberal bag limits and outright wolf-control. Impacts of management regimes on wolf populations and behavior can further alter the effects wolves have on the biological, physical, and sociological (i.e. socio-ecological) attributes of a region.

Our understanding of the effects wolves have on socio-ecological systems is limited by the rarity of controlled experiments and the high number of variables (e.g. population size, effects of other predators). Although some academic disagreement exists as to whether wolves are a keystone species (Linell, Swenson, & Andersen, 2000; Ucarli, 2011) relatively recent research has established that the presence or absence, and abundance of wolves can affect the condition of

large natural systems. Some illustrative examples of these large scale effects include findings that:

- Wolves regulate prey numbers (Skogland, 1991).
- Wolves regulate browsing by prey species through numeric prey reduction and through altering prey behavior (i.e. effects beyond simple regulation of prey numbers) (Beschta & Ripple, 2013).
- By preventing ungulate congregations at water sources, and allowing riparian regrowth, wolves can improve water quality (e.g. increased shade/ cooler water, decreased erosion and sedimentation) (Kaufman, Brodie, & Jules, 2012; Mao, et al., 2005).
- Maintaining or restoring wolves may maintain or restore biodiversity (Hebblewhite & Smith, 2010).
- A change from absence to presence of wolves or vice versa can lead to sociological changes in a region (Fascione & Smith, 2004; Sharpe, Norton, & Donelly, 2001), such as difficulty subsisting, a perceived lack of safety, and the inability of some men to prove their masculinity by subduing wild nature (Anahita & Mix, 2006).

The combination of wolves' transboundary nature and their influence on ecosystems means that policies regarding wolves, either within or across boundaries, can have significant implications across a range of natural resource management goals. These implications can be felt in local, regional and even landscape scale ecosystems, and in associated human values. Region-specific and shared examples of social and ecological impacts are addressed in each following case study.

The international, high public profile of wolves further contributes to their suitability as a subject of transboundary resource study (Mech & Boitani, Wolves: Behaviour, Ecology, and Conservation, 2003; Hayes, 2010). Mass media outlets regularly follow wolf management controversies in Alaska and across the United States of America (US), in Switzerland, and Italy (e.g. Tagesanzeiger, Zurich; Newsminer, Fairbanks; New York Times, etc.). Opinions regarding wolves and wolf management are expressed loudly by interest groups with often opposing goals and objectives. Some prominent participants in this public dialogue include Defenders of

Wildlife, Alaska Outdoor Council, Schweizerischer Schafzuchtverband, Gruppe Wolf Schweiz, and the International Wolf Center. Many people locally, regionally, nationally and internationally seem aware of at least some facets of wolf policy. In part because of the wolf's media visibility, impact on ecosystems and cultural landscapes, and the long cultural history between wolves and humans (Lopez, 1978; Fritts, Stephenson, Hayes, & Boitani, 2003), wolves and wolf-control can figure into people's identities, personally, regionally, and even on national scales (Anahita & Mix, 2006; Kaltenborn & Bjerke, 2002; Kellert, Black, Rush, & Bath, 1996).

The combination of wolf-policy's biological and cultural implications, lead to economic considerations. The economic implications of wolf management are as varied as ecosystem services (Schmitz, Hawlena, & Trussel, 2010), 'non-consumptive' tourism (Duffield, Neher, & Patterson, 2006), economic effects to livestock owners, and sport and subsistence hunting opportunities (Kofinas, Subsistence Hunting in a Global Economy: Contributions of Northern Wildlife Co-Management to Community Economic Development, 1993; Loveridge, Reynolds, & Milner-Gulland, 2006). Presumably for all of these reasons, wolves might be the most studied of large, land mammals (Hayes, 2010).

1.2.2.1 What Are We Managing?

The real answer to the question: 'What are we managing?' is, of course: 'people'. Although some natural borders are insurmountable for wolves (e.g. the Pacific Ocean), the two regions and three case studies I have selected focus on areas where human activity is regulated, legislated, or at least informally agreed upon. Human activity in these areas is the decisive factor for the status of wolves. As an example, if humans did not legally and illegally remove wolves from the population, then recolonization of the entire Alpine Arc by wolves would likely take place swiftly. Absent human intervention, recolonization would take place in a wolf-favorable context. This present day context consists of alpine forest regrowth, rebounding prey bases, reduced human dependence on prey and (local) forest products, and more efficient and scientific management of all these resources. Wolf management outcomes do not take place in a vacuum. Wolf population outcomes are intertwined with other components of a socio-ecological system (see Figure 1).

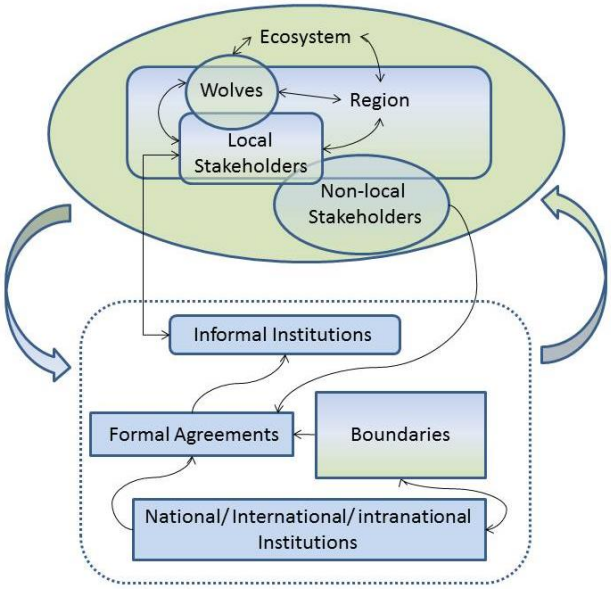

FIGURE 1: SOCIO-ECOLOGICAL FRAMEWORK: THE GOVERNANCE OF WOLVES IN TRANSBOUNDARY REGIONS

So 'What are we managing for?' Becomes a more apt question than 'What are We Managing?' The answer is that there are a nearly infinite variety of combinations of wolf management outcomes related to social values and ecological factors. I focus here on what parameters are used when defining what is meant by 'wolf management'.

The socio-ecological framework for the governance of wolves in transboundary regions is an essentialized representation. The framework represents the main, shared components I have identified in all three case studies that figure into transboundary wolf governance. Generally, the components of the socio-ecological framework were divided into two basic categories. The first category consists of components defined by natural attributes such as the ecosystem at large and wolves. The second category consists of components which are defined intentionally by humans such as national and international institutions. I chose the word 'intentional' above, recognizing that wolves and the ecosystem have also been defined by humans, though not with the explicit intent to do so. Though our definition(s) of wolves and ecosystems attempt to describe something existing independent of us, our understanding of the natural world is limited by human perception. This second category also includes formal and informal agreements.

A third category of socio-ecological framework components that are of combined natural and human-derivation was also necessary. In this third category, components such as 'region' are both defined by the natural world (e.g. geography) and humans (e.g. cultural delineation). Boundaries and local and non-local stakeholders also belong to this third category. Boundaries can be both natural (e.g. river, mountains) and/ or human-designated, political borders. Local and non-local stakeholders, likewise, are defined by their proximity and through cultural identification.

Components primarily categorized as ‘natural’ are shaded green. Components primarily categorized as ‘human-derived’ are shaded blue. Components that are a combination of ‘natural’ and ‘human derived’ have a gradient fill.

Components such as (political) boundaries, national institutions (e.g. national wolf management plans), international institutions (e.g. Convention on the Conservation of European Wildlife and Natural Habitats [Bern Convention]), and intranational institutions (e.g. memoranda of understanding between the National Park Service [NPS] and the state of Alaska) have rigidly defined physical or figurative boundaries. These rigidly defined components are represented by rectangles.

Components with less easily defined physical or figurative boundaries such as non-local stakeholders (What is a stakeholder? And, to a lesser extent, what is local?), or wolves (We know what wolves are, but their territories, behaviors, and locations are less predictable.) are represented with ovals. Again, there was a need for a third, in-between category; in this case where figurative or physical boundaries are more or less defined, but open to interpretation. An example of an in-between component is 'region'. There might be a general consensus about the existence of a region (e.g. the Alpine Arc, ecoregions, French-speaking Switzerland); however, the borders of regions are often nebulous with some cultural or physical attributes defying simple delineation. This third type of component is represented by rectangles with rounded corners.

The placement of shapes within the framework is representative of physical or figurative overlap or lack thereof. For example: non-local stakeholders are completely within the ecosystem, there is also minor overlap between non-local stakeholders and local stakeholders because of the indistinctness of 'local' (physically and culturally). More significant overlap can be seen between 'local stakeholders' and 'region' indicating that for the most part, stakeholders who consider themselves and/ or are considered 'local' are local to a region.

Finally, a division exists between: the physical world of ecosystems, wolves, regions, and stakeholders; and institutions created to aid in the governance of the aforementioned. This latter category of acknowledged institutions is displayed within a rectangle with rounded corners. These institutions are sometimes interpreted, reinterpreted, and changed. This shape has a perforated boundary because it is not a component in itself, rather a grouping. An 'institutions' component would inevitably include aspects of 'region', 'local stakeholders', and 'non-local stakeholders'; however, this framework is intended to highlight only the main components of the system and their interplay. Apropos of interplay, lines and arrows simply show the main direction of influence between components. Large, gradient arrows signify that despite dominant directions of influence, all components from all categories inherently influence each other.

'What is a wolf?' Seems like a simple enough question, but wolf – dog hybridization and contested definitions of sub-species complicate our vernacular understanding of what a wolf is. To further complicate the situation, as we shall see, wolves are often managed by pack units, or even by individual wolves' statuses in a pack.

1.2.2.1.1 ALASKA

In the contiguous states, questions of species, sub-species, populations and danger of extinction lead to complicated legal situations. One such situation is related to Endangered Species Act (ESA) protection (O'Brien & Mayr, 1991). In Alaska, attempts have been and will likely be made again to use the ESA to protect small, isolated populations such as the Alexander Archipelago grey wolf population (proposed subspecies), and or their habitat (Wolf & Edwards,

2011). Current wolf habitat surrounding the locations of my case studies remains traversable by wolves, and largely unfragmented. Thanks to these habitat characteristics, genetic questions are ostensibly irrelevant in both Alaska case studies. The National Park Service (NPS) does have clear policy on genetic resource management principles (United States National Park Service, 2006), though it is unlikely to come into play due to the connectivity of Alaska's landscape. Population questions, on the other hand, play important roles in both Alaska cases. This is especially so at the pack unit level. The NPS' Population Management Principles in particular are relevant in Chapter 3.

1.2.2.1.2 Western Alps: Italy & Switzerland

In the Council of Europe's (CoE) Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) (Council of Europe, 1979), discussed in more detail in Chapter 3, parties of the treaty have committed to not removing wolves for virtually any reason if removal jeopardizes the population. In the early stages of my research I was in contact with Walter Vetterli at World Wildlife Fund (WWF), Switzerland (personal communication, December 2009). I questioned how Switzerland, a party to the Bern Convention, could officially permit the removal of any wolves, as had recently been done, and not endanger a 'population' of between 1 and 8 individuals. Christian Kilchofer, a lawyer for the Swiss government, offered a legal justification. Kilchofer stated that the term 'population' as it is used by the Bern Convention refers to a 'biological population' (personal communication, December, 2009). According to Kilchofer (at that time), there was considered to be no isolated Swiss populations. The population of wolves at that time consisted of young dispersing males originating from Italy, in Switzerland as part of a regular transboundary "come and go" of species (personal communication, December, 2009). The fact that two years prior to my communication with Kilchofer, Switzerland, Italy, and France had entered into an agreement recognizing a single Italian-Swiss-French wolf population (Consentino, Michele, & Oberle, 2006) highlights the complexity of understandings regarding what 'population' is in question.

This raises a number of questions such as: If these dispersers do not belong to a Swiss population, what population do those wolves belong to? Do they belong to a 'population' at all?

If they originated in Italy, is it a portion of the Italian wolf population that is being managed, a portion of the Italian-Swiss-French population, or are the wolves in question a part of a larger European population? Is preventing dispersing wolves from a long isolated, potentially genetically depressed, Italian population from reaching packs and dispersers from Slovenian and other eastern European populations, as suggested by Angelo Gandolfi and others (personal communication, April 2010), jeopardizing a population? If so, which population(s) is this immigration prevention harming? On the other hand, the Italian wolf might represent its own subspecies (Lucchini, Galov, & Randi, 2004). Would allowing populations to mix dilute or cause a subspecies to go extinct? Does it matter? To add a further layer of complexity, what if the dispersing male is a wolf-dog hybrid? Is it even a wolf? What is the threshold for a wolf to be a wolf?

A number of the above questions have been clearly and pragmatically answered in the Guidelines for Population Level Management Plans for Large Carnivores (Guidelines) penned by the Large Carnivore Initiative for Europe (LCIE) in 2008 at the request of the European Union (EU) (Linnell, Salvatori, & Boitani, 2008). The Guidelines provide best practices, and are not legally binding. The Guidelines do, however, clarify some ambiguities within overarching, relevant treaties such as the Bern Convention (discussed in detail in Chapter 3). The Guidelines were also created specifically with the intent to apply to EU, as well as non-EU countries such as Switzerland. Switzerland has adopted the Guidelines (C. Nienhuis, personal communication, April, 1013). The relevant institutional levels affecting wolves in all case studies are explored in Chapter 3.

The Guidelines addresses the standard definition of 'population' as: "a group of individuals (of the same species), living in the same area and potentially reproducing among each other," and juxtaposes it with the "reality" of spatial heterogeneity, discontinuity and fragmentation. Instead of 'population' the Guidelines proposes using 'metapopulation', a "series of small(er) (sub-) populations with a limited exchange of individuals." In the Guidelines, isolated occurrences, populations and subpopulations, parts of populations and management units, all fit

within a ‘metapopulation’. A stated goal of the Guidelines is to shift the management focus from the species and management unit, to this (meta-) population.

In December of 2009, wolves were legally removed in Switzerland because they were not considered part of a ‘population’. These same wolves are clearly part of a ‘metapopulation’. Other legally defensible reasons for removing wolves from a population, even under Bern Convention protection are discussed in Chapter 3.

The question of dog - wolf hybridization is also addressed as a potential problem by the Guidelines. The Guidelines states that it is likely impossible to ensure that wolf populations are completely free of dog genes. It also states that natural breeding selection will likely remove these genes from the population. The Guidelines recommended certain actions, such as minimizing wolf-dog hybrid pets, and removing obvious hybrids from the wild, in such a way that they are afforded the same protection of wolves but can be effectively removed by trained government employees.

Perhaps a more subtle or even unintended implication resides in the mention that hybridization most often occurs in places with very low wolf densities, and in areas where wolves are subject to heavy perturbation. I believe one can read this as a suggestion that the best way to minimize hybridization is to have a large enough wolf population that wolves’ preference for breeding with wolves, not dogs, is realizable.

1.2.3 Regions of Choice for Case Studies

Alaska and the Western Alps have starkly different histories with relation to wolf populations and human density. Nonetheless, there are several similarities between the transboundary governance issues of wolves in both regions.

To begin with wolf - human issues, American/ Alaskan populations of European descent inherited, to some degree immigration-era, contemporary European perspective on wolves. These historic, primarily negative, European cultural perceptions of wolves are evident in past

actions toward wolves in both regions (Lopez, 1978). The evolution of strongly dichotomous attitudes towards wolves has followed a similar trajectory on both sides of the Atlantic albeit with different time-frames.

Both Alaska and the Alps are culturally iconic for their relative wildness and nature-oriented attributes (Kollin, 2000; Zimmer, 1998). In present popular culture, wolves are often seen as an embodiment of wildness (Lopez, 1978; Fritts, Stephenson, Hayes, & Boitani, 2003). In both the Western Alps and Alaska friction is apparent between local, rural populations and urban advocacy for wolves. Rural populations tend to favor actively controlling or eliminating wolf populations. Urban populations tend towards a more protectionist orientation toward wolves. Rural populations feel more immediately affected by wolves and wolf management. Urban populations are larger than rural populations and have an advantage at higher-level politics and well-funded advocacy (e.g. national, international). Some friction occurs as some locals resist what they see as urban environmentalists' imposition of urban, wolf-related values on locals. These 'urban environmentalists' are perceived by locals as not having to live with the effects of their own pro-wolf advocacy (Boertje, Keeck, & Paragi, 2010; Fritts, Stephenson, Hayes, & Boitani, 2003). The rural - urban strife goes much deeper than a superficial recounting (Robbins, 2004).

Some of the main rhetorical tropes in favor of wolf-control in Alaska, and against wolf recolonization in the Western Alps are also interestingly similar. Uncontrolled and/ or recolonizing wolf populations are seen by some as posing a threat to livelihood, food security, traditional activities, and human safety (Anahita & Mix, 2006; Schweizerischer Schafzuchtsverband, n/d).

Borders also figure prominently into the debate(s) about wolves. In Alaska, the State's policies of aerial wolf-control, a component of intensive management (IM) meant to increase ungulate numbers for human harvest, are particularly controversial and salient. The controversy and saliency is evident in both the state itself, and the nation at large (Boertje, Keeck, & Paragi, 2010; National Research Council, 1997). In contrast to the State's IM program, the NPS is well-

known for its nature-preservation and visitor-experience orientation. Specific mandates and policies of the NPS and NPS' research goals and functions are less well known than NPS' visitor experience and preservation activities, but are at least as important in wolf-policy discourse. Conflicting NPS and State mandates clash at shared jurisdictional borders. The resulting mutually consequential transboundary agreements and fallouts between the State and the NPS have been well publicized (e.g. nationally in the New York Times, and locally in the Fairbanks Daily Newsminer).

In the Trinational Alp region, a small remnant population of wolves (estimated at less than 100 individuals) from Italy has begun to increase in number and recolonize their former range in Switzerland and France (Breitenmoser, 1998). Wolf recolonization triggered multi-level governance agreements regarding wildlife protection that had been created decades before, such as the 1979 Bern Convention. How well Italian, Swiss, and French signers of applicable international treaties foresaw the present recolonization can only be speculated upon.

The most vocal opponents of recolonization are rural, border region, locals (Institute of Sociology, University of Bern, 1999). As mentioned before, some members of this constituency even express a desire to re-extirpate the wolf altogether. At the other end of the spectrum, a similarly vocal 'environmentalist' constituency strongly favors recolonization. Though the majority of the public may be considered ambivalent (U. Breitenmoser, personal communication, May 2013), they support the return of the wolf when polled (Boutros, 2003).

It is also important to note that although one of the main agreements studied in this thesis is a trinational agreement between Italy, Switzerland, and France, I focused on the Italian - Swiss border. Unlike Switzerland, Italy and France are both members of the EU and are both bound by the Habitats' Directive 92/43/EEC (Habitats Directive) (European Union, 1992), discussed in Chapter 3. The Habitats Directive is more explicit and enforceable than overarching agreements affecting all three countries. This results in a larger contrast across the EU - Swiss border, than across the Italian – French border. Sufficient differences exist between Italian and French wolf management to preclude handling them as one entity, but handling all three became much

more muddled and much less manageable. Interviews and other personal communications confirm that Italian and French approaches to wolf management are more cohesive with each other, than either EU countries' approach is with the Swiss approach (C. Neinhuis, April, 2013; E. Dupré, April, 2013). As a result I believe that studying management across the Italian - Swiss border provides more insight.

1.2.4 Methodology

1.2.4.1 Case Study

In order to develop a better understanding of transboundary wolf governance agreements I chose a case study approach. Using case study as a method is a fitting tool when 'how' questions need to be answered and the research focuses on contemporary topics (Yin, 1989). Case Studies are furthermore appropriate when researchers do not require control over research subjects' behavior, or events (Yin, 1989). All of the above indicate the appropriateness of case study method for this research.

1.2.4.2 Literature Review

In all three cases, I undertook a review of academic and gray literature, as well as newspaper articles, related organizations' websites and other relevant sources. This information served as a foundation for all three cases. Thorough knowledge of available information provided me a level of credibility with interviewees. The knowledge also enabled me to participate in deeper, more informed communications during elite interviews than would have otherwise been possible.

1.2.4.3 Elite Interviews & Prolonged E-dialogues

Between December 2009 and May 2013, I conducted elite interviews with 26 subjects. Interviews ranged in length from a couple of minutes to over an hour. Additionally, due to scheduling complexities and the intercontinental scope of this study, I engaged in several prolonged e-mail dialogues. Many of these communications began as brief telephone calls or e-mails for clarification of publicly available material and morphed into something more encompassing. For simplicity's sake, I refer to all contacts as interviewees. Interviewees were

chosen because of their position to speak officially on a subject or for an organization, their direct involvement in a case study, and/ or their extensive knowledge of one or more case studied; i.e., “to acquire information and context that only that person can provide about some event or process” (Lamont & White, 2005).

When an interview was likely to be longer than a few minutes, I contacted the interviewees in advance to make an appointment for a telephone or face-to-face discussion. Some interviewees were contacted multiple times over the course of the study as new information came to light or became necessary. Follow-up e-mails were sent shortly after all communications thanking participants and. Where appropriate, these e-mails included brief summaries of information collected, for confirmation of accuracy.

In all three case studies, I used snowball sampling. That is, initial interviewees referred me to other relevant interviewees. This method was particularly important since I was trying to determine where the knowledge was located (Noy, 2007).

CHAPTER 2 BACKGROUNDS

To more fully understand the institutions, agreements, and impacts explored in Chapter 3, certain background information is needed. First in section 2.1, I provide a general overview of the case studies' regions' geographies. Following this high-level geography, I zoom in to the attributes of the borders in question. This is followed by a brief comparison of the regions and borders.

Section 2.2 provides the environmental and social historical context in which each case exist(ed). Special attention is given to the vitriolic wolf controversy in Alaska. Again, points of comparison between the two regions are discussed.

Finally in section 2.3, I integrate both regions in a discussion of overall trends in changing attitudes towards wolves and nature.

2.1 GEOGRAPHY & BOUNDARIES

2.1.1 ALASKA

Alaska extends 3,639 km east to west at its widest, and 2,285 km north to south, for a total of 1,477,953 km^2 (United States Census Bureau, 2013) between the latitudes of 51°20'N to 71°50'N, and the longitudes of 130°W to 172°E. Alaska shares a long artificial, geometric border on the east with Yukon, Canada. The geometric border in the southeast panhandle area separating Alaska from British Columbia (see Figure 2.1) is based loosely on geologic features and has been subject to debate since Russian times (Penlington, 1972).

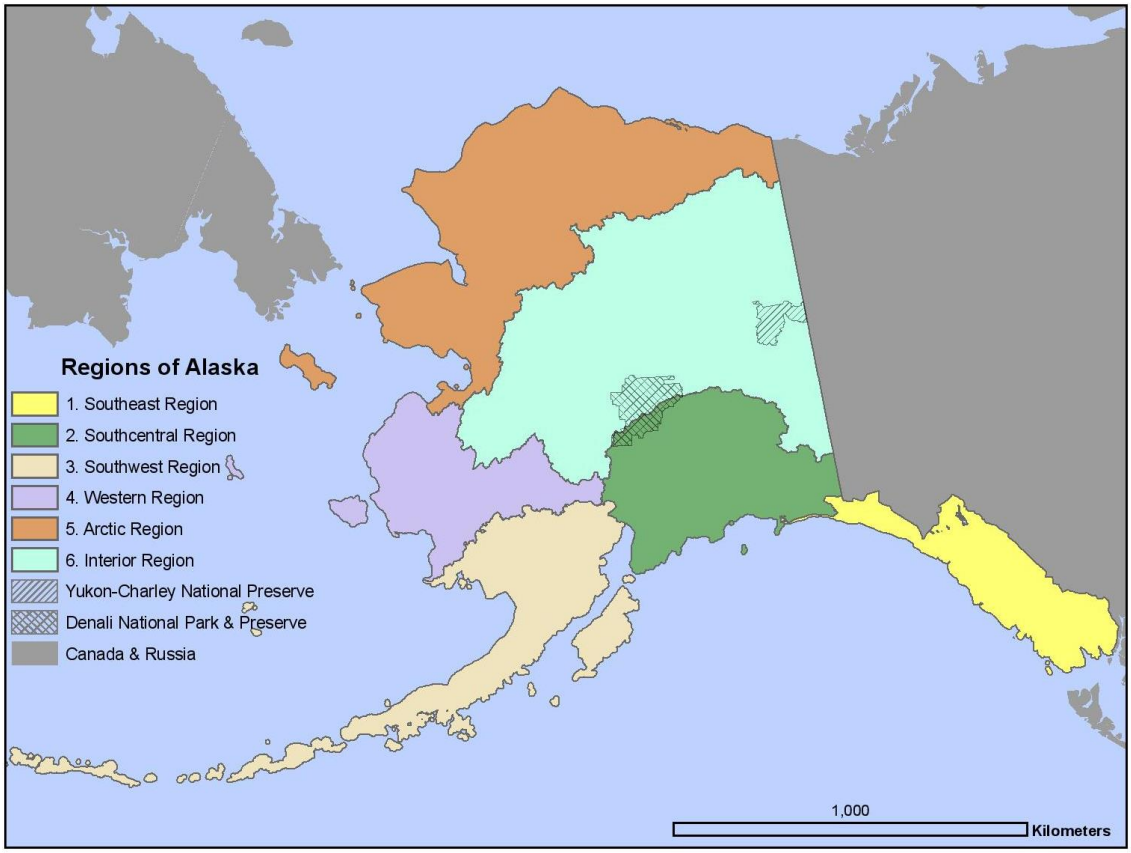

FIGURE 2.1: REGIONS OF ALASKA MAP

The state is surrounded mostly by water. The distance between the Alaskan mainland to Russian mainland is about 82 kilometers.

There are various ways to break Alaska down by region. For reference and simplicity's sake I refer to the Regions of Alaska used by the Alaska Department of Fish and Game (ADFG), seen in Figure 2.1. Both Alaska case studies are located mostly in the Interior Region. In the second case, Denali National Park and Preserve (Denali) extends into the Southcentral Region.

ADFG further breaks Regions down into self-descriptive, Game Management Units (GMUs). GMU boundaries follow natural geographical boundaries, and cover the entire state for the purpose of State game management. An example of GMUs can be seen in Figure 2.2.

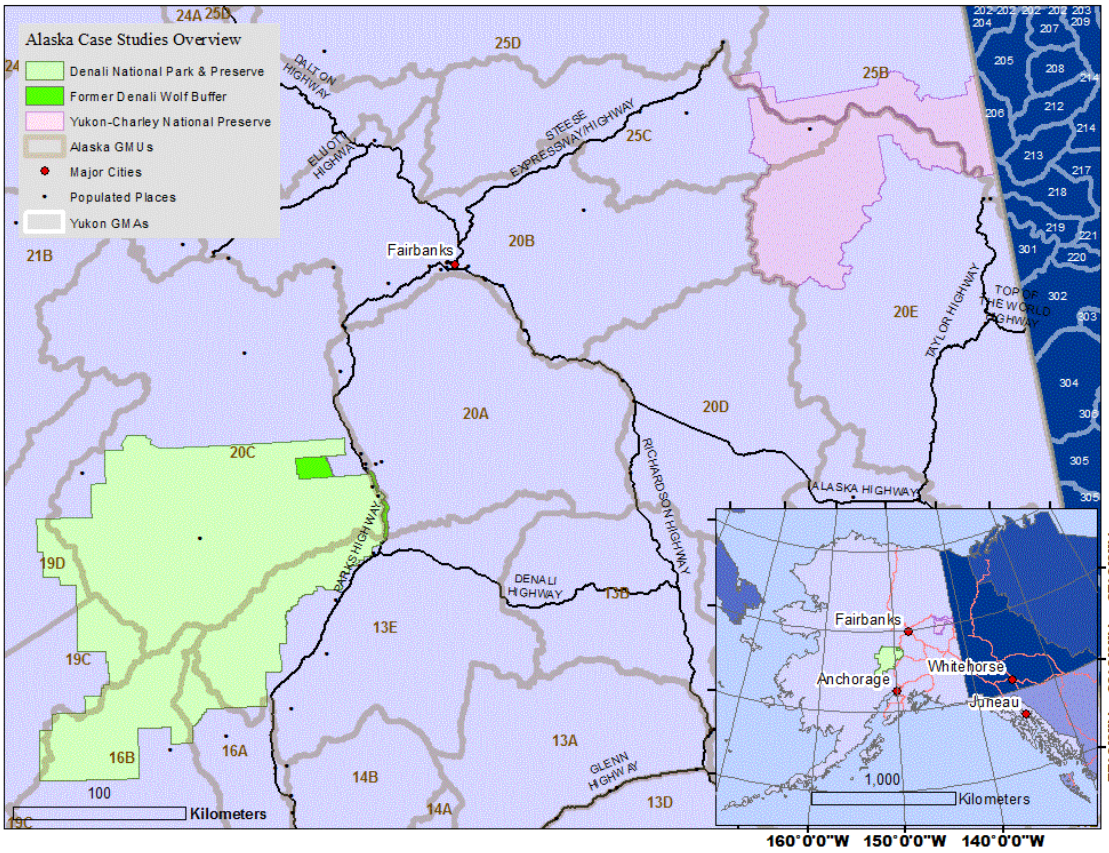

FIGURE 2.2: ALASKA CASE STUDIES OVERVIEW MAP

Both of the Alaska case studies focus on areas within the overarching 'boreal' ecoregion.

The road system is sparse in Alaska (see Figure 2.2), leaving vast areas of the state primarily accessible only by boat, plane, and snow machine.

The population of Alaska was estimated at 710,231 in 2010 (United States Census Bureau, 2010). Numerous cities and villages in Alaska are located on and off the road system, but only a handful have populations in the thousands. Main population centers in Alaska are Anchorage (pop. 291,826), Fairbanks (pop. 31,535), and the State Capital Juneau (pop. 31,275) (United States Census Bureau, 2010). The low population density and limited infrastructure footprint have left largely intact, unfragmented natural areas.

Wolves occur throughout mainland Alaska and on many Islands. In Alaska wolves are found in most of their historic range with the exception of urban areas, though even in Anchorage and Fairbanks wolves occur on the outskirts of town. Wolves have never been categorized as threatened or endangered in the State, though they were once extirpated from the Kenai Peninsula in 1915. Wolves recolonized the Kenai Peninsula in the 1960s (Peterson & Wollington, 1982).

2.1.2 Western Alps: Italy & Switzerland

The peninsula of Italy is located between the latitudes of 35°N and 48°N. The country is 301,263 km² and has a population of around 60,000,000 (European Union, 2013). Italian territory includes the following ecoregions (WWF, n/d):

- European-Mediterranean Montane Mixed Forests.
- Mediterranean Forests, Woodlands and Scrub.
- Mediterranean Sea ecoregions.

Landlocked Switzerland, is located between 45°49'N and 47°48'N. The country is 41,285 km2 and has a population of 7,954,662 (European Commission, 2013). Swiss territory includes the following ecoregions (WWF, n/d):

- Western European Broadleaf Forest.
- Alps Conifer and Mixed Forest ecoregions.

Human population centers and their infrastructural trappings generally exist in the less mountainous regions of Italy and Switzerland. Despite the adaptability of wolves, they are infrequent in urban areas (KORA, 2013; Boitani, Ciucci, & Raganella-Pelliccioni, 2010) and seem unlikely to establish a foothold there. The mountainous region, focused on in this case study is sometimes known as the Alpine Arc. The Alpine Arc stretches from the southeast of France, up across the north of Italy, through most of Switzerland, Liechtenstein, and into Austria, southern Germany, and Slovenia (Figure 2.3).

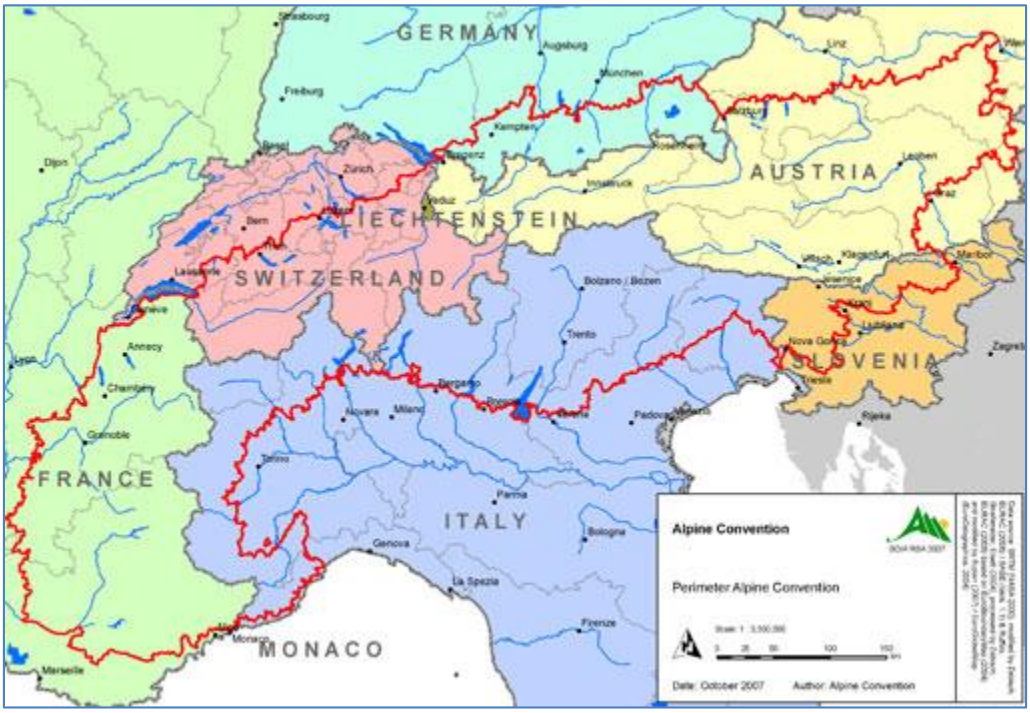

FIGURE 2.3: ALPINE ARC MAP

Due to the location of the Italian - Swiss border, I will use the term Western Alps in my third case study. 'Western Alps' is also a term associated with a larger, traditional sub-categorization of the European Alps. The term Western Alpine Arc would likely be a better choice were I to address the entire trajectory of wolf recolonization. The Western Alpine Arc includes the Italian Apennines. The Apennines run the length of the Italian peninsula and were the refugium for the relict population of Italian wolves before their population re-expansion.

Wolves, once present across most of Europe, were extirpated on a large scale. Remnant wolf populations persisted in Spain, Portugal, Italy, and many of the Balkan States (Breitenmoser, 1998). In the last 30 years, wolves have begun recolonizing neighboring countries (Breitenmoser, 1998).

Political borders between Italy and Switzerland follow both natural and cultural borders. The road and infrastructure system in Italy and Switzerland is extensive (see Figure 2.4), and 'cultural landscapes' even exist in extremely rugged terrain. Habitat is highly fragmented.

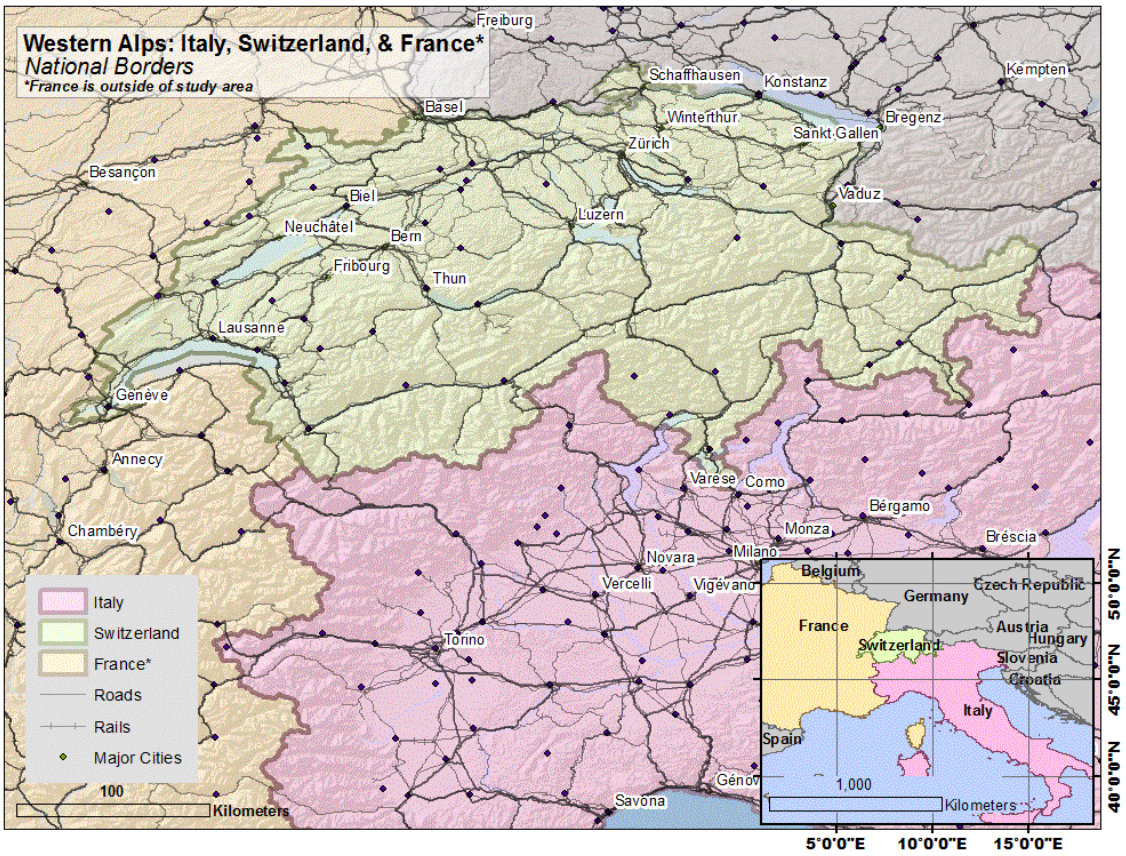

FIGURE 2.4: WESTERN ALPS: ITALY, SWITZERLAND, & FRANCE MAP[1]

2.1.3 COMPARISON

Alaska and the Western Alps have dissimilar climates and latitudes; however, both regions have suitable wolf habitat. Main points of geographical contrast between the Alaskan and Western Alps case study regions are population density, infrastructure density, and associated habitat fragmentation. The scale of Alaska is large in comparison with Italy and Switzerland, yet the scale of the relevant borders is similar (see Figures 2.2 and 2.4).

[1] See discussion of study area in Chapter 1

Jurisdictional boundaries are quite different between the two regions, but the natural borders in all case studies are permeable for wolves. Though wolves do not respect jurisdictional boundaries, some evidence suggests that they may learn to avoid them if they perceive danger (Thurber, Peterson, Drummer, & Thomasma, 1994). If the boundaries in question intrinsically prevented or significantly reduced transboundary wolf movement, no impetus for creating the agreements examined in this thesis would have existed.

2.2 Environmental & Social History in Context

2.2.1 Alaska

There is little information about wolf-human interactions in the Alaska region before European contact and settlement. Alaska is a big place with many, very different cultural groups. Recognized, somewhat permeable natural and cultural borders in the Alaska-region extend well beyond the present-day, artificial, geometrical Alaska-Canada border. These cultural regions are defined largely by language group and corresponding cultural practices (Figure 2.5). For these reasons it is impossible to make definitive statements about historical Native Alaskan wolf-human interactions.

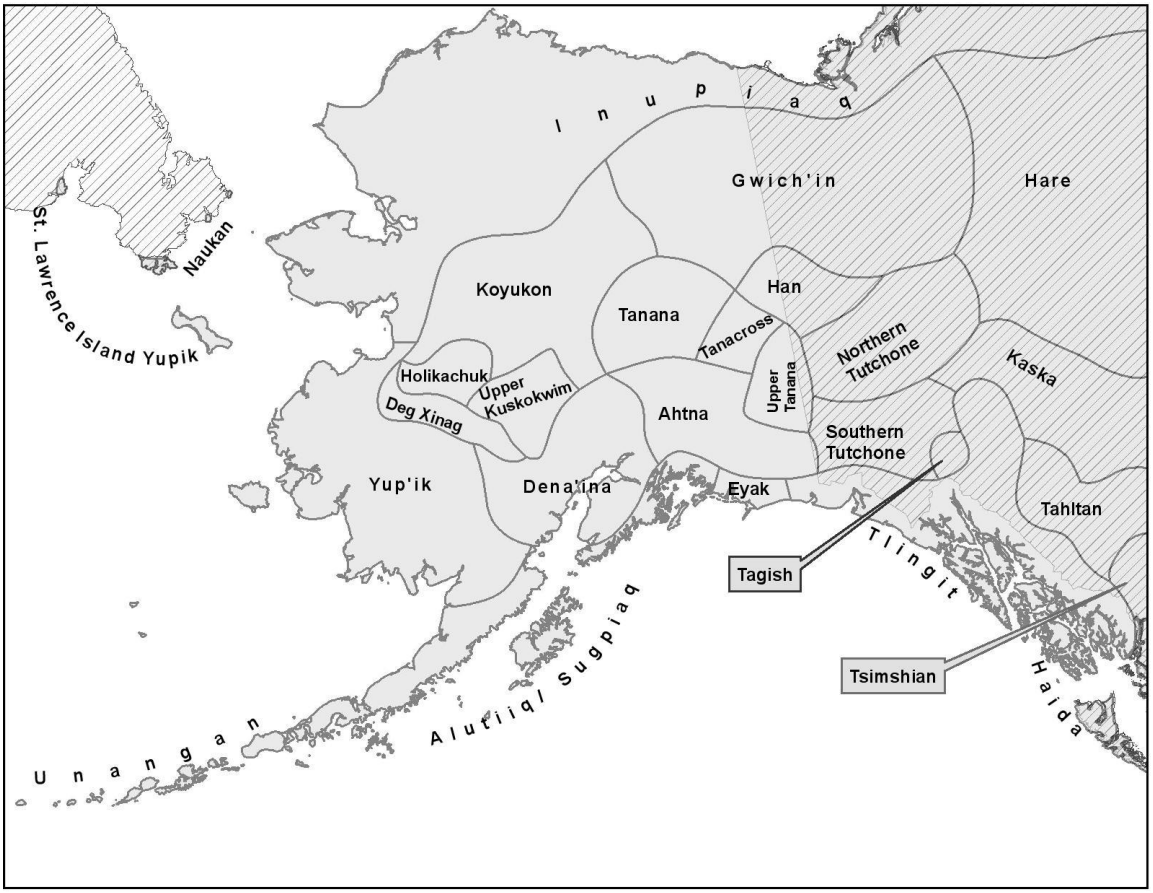

FIGURE 2.5: ALASKA NATIVE LANGUAGES MAP

It seems pre- and post-contact hunting and trapping of wolves as furbearers for use and trade was common. From what is known historical, cultural animosity between Alaska Natives and wolves does not appear to have been common (Fritts, Stephenson, Hayes, & Boitani, 2003). Likewise, no evidence exists pointing to, concentrated attempts by Alaska Native to control wolf populations historically (Fritts, Stephenson, Hayes, & Boitani, 2003).There are some stories from pre-contact times about wolf denning (i.e. killing wolf pups in their dens) (Fritts, Stephenson, Hayes, & Boitani, 2003). Denning was apparently most frequent when prey species abundance was low, but efforts to control wolf numbers do not appear to have been widespread (Lopez, 1978). Limited pre-contact wolf-control can likely be attributed to one or more of the following: a lack of means to significantly reduce wolf numbers (e.g. guns), a lack of biological need to

reduce wolf numbers (i.e. there was sufficient prey), or a lack cultural disposition to control wolves.

Some oral history stories refer to multi-generational, pre-contact, periods of limited game abundance (National Research Council, 1997; Fritts, Stephenson, Hayes, & Boitani, 2003). Present day wolf-control proponents and others sometimes point to these periods of limited game abundance as evidence for the predator pit hypothesis. The following is a simplified version of the hypothesis as described by Mech and Peterson (Mech & Peterson, Wolf Prey Relations, 2003).

The hypothesis is based on the idea that there are three basic, potential equilibria between predators and prey. The first equilibrium is: 'high-high'. In this equilibrium there is a stable abundance of both predators and prey until a stochastic event (e.g. pandemic illness; recurring, abnormally severe winters) disturbs the system and throws it into one of the other two states.

The second equilibrium is 'dynamic', with correlated peaks and crashes in both predator and prey numbers. In this state for example, there may be abundant moose, and few wolves. These wolves would prey heavily on moose, increasing in numbers until there are so many wolves that there is insufficient moose. Next, the wolf population would then crash; allowing the moose population to recover, and so forth.

The third equilibrium is 'low-low', where predation keeps prey numbers much lower than the habitat's carrying capacity for prey species. In this state low prey numbers keep predator numbers from increasing, and predation keeps prey numbers low. This third theoretical state is also known as the 'predator pit'. A stochastic event to a predator – prey system in this state could lead to the extirpation or extinction of the species. Some scientists have suggested that removing a large percentage of predators from this low-low equilibrium for long enough will allow prey populations to recover to a high density. Once prey numbers have recovered sufficiently, predators can then be allowed to recover. The theoretical result of this management intervention is the creation of a stable, 'high-high' equilibrium.

Although there is virtually no debate that wolves (and other predators) have an impact on prey numbers (Hayes, 2010; National Research Council, 1997), the validity of the multiple equilibriums and predator pit hypotheses is subject to debate. Real world experiences have shown the concept is at best over-simplified (Mech & Peterson, Wolf Prey Relations, 2003). Tying this hypothesis into a poorly understood and incomplete (pre)historical context is inconclusive.

When the first permanently settling Europeans, came to Alaska in 1740, about 80,000 indigenous people lived in Alaska (Alaska Department of Labor and Workforce Development, 2013). The Europeans, mostly Russians, remained close to the coast hunting furs and interacting with the indigenous population. Europeans imported European pathogens, Christianity (Alaska Department of Labor and Workforce Development, 2013), and a (sometimes related to Christianity) anti-wolf disposition (Lopez, 1978).

The United States purchased Alaska from Russia in 1867. A series of gold rushes caused pockets of population growth in the, then, territory (Alaska Department of Labor and Workforce Development, 2013). Concentrated populations, cut forests for fuel and timber, and hunted prey intensely (National Research Council, 1997). These activities lead to historically low game populations and in 1915 precipitated a wolf bounty (National Research Council, 1997).

Alaska followed a similar wolf-control trajectory to the contiguous US. Wolf-control was carried out through poisoning and trapping. When airplanes became available, aerial shooting by federal agents was the norm (National Research Council, 1997). Lopez and others have suggested that this aggressive effort to eradicate wolves was only partially related to bolstering game availability (Lopez, 1978). He argues eradication efforts upheld the vehement status quo of perceiving wolves as an enemy and a pest with little or no positive traits (Lopez, 1978). Lopez further argues that this attitude, originally imported with European immigrants, was amplified in the Americas (Lopez, 1978).

During World War II, military bases were built in Anchorage and Fairbanks, leading to a large human population influx (Alaska Department of Labor and Workforce Development, 2013). The militarily strategic Alaska Highway built in 1942, connected Fairbanks to the lower 48 states. Such road access facilitated human population increase, and made some areas more accessible than they had been for hunting. In the late 1950s, airplanes had become accessible enough that people besides federal agents began engaging in aerial wolf-control (National Research Council, 1997). By the 1960's aerial hunting by the public was common (Regelin, 2002). Alaska became a State in 1959.

In 1963, the ADFG classified wolves as a big game animal and a fur bearer, assigning value to the wolf, and putting some regulations on wolf hunting (Regelin, 2002). In 1968 the wolf bounty was lifted (Habro & Dean, 1981).

The discovery of oil in 1968 led to: a) an economic and human population boom (Alaska Department of Labor and Workforce Development, 2013); b) the need for the Alaska Native Claims Settlement Act (ANCSA) (1971), which led to the official designation of Federal, State, Native and private land ownership, and later the Alaska National Interest Land Claims Act (ANILCA) (1980), discussed in more detail in Chapter 3; c) the construction of the Dalton Highway, eventually making more, previously remote landscape accessible; and d) continued urban growth, especially in Fairbanks. Undoubtedly many of these newcomers subscribed on some level to retro-frontier masculinity. Many immigrants to Alaska had a romantic image of untouched wilderness, and a desire to embody their masculine ideals in (Anahita & Mix, 2006). Though hunting for many of these newcomers was not a caloric necessity, it increased the strain on prey species such as moose and caribou. The human population in 1990 reached 550,043 (Alaska Department of Labor and Workforce Development, 2013).

The human population in Alaska continues to grow (Alaska Department of Labor and Workforce Development, 2013). The number of hunting permits issued is also growing (Alaska Department of Fish and Game, 2013), but at a slower rate than human population growth in Alaska. At the same time the percentage of Alaskans engaged in hunting is declining (U.S.

Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce,, 2013). Additionally, a clear rural to urban migration is taking place (Alaska Department of Labor and Workforce Development, 2013). If these trends continue, wolf-control conflict is likely to increase. Growing hunting pressure on limited prey will likely increase the demand among hunters for wolf-control. At the same time a growing urban, wildlife protectionist-oriented, base will likely increase political pressure against wolf-control. These changes will challenge path dependent, Alaska wildlife management institutions' status quo.

2.2.1.1 The Wolf-Control Controversy in Alaska

Because of the high-level of controversy surrounding Alaska wolf-control policies, additional context is useful for understanding the forthcoming cases.

Hunting constitutes an important component of, especially rural and Native, Alaskan identity. This appears prominently in both ANILCA and the Alaska State Constitution. Figure 2.6 shows active IM areas in Alaska, and generalized proximity of current predator control efforts[2].

[2] Source: ADF&G (2013) Intensive Management in Alaska. Retrieved from: http://www.adfg.alaska.gov/index.cfm?adfg=intensivemanagement.programs. Note: Actual predator control units are usually smaller subsets of the subunits highlighted on this map.

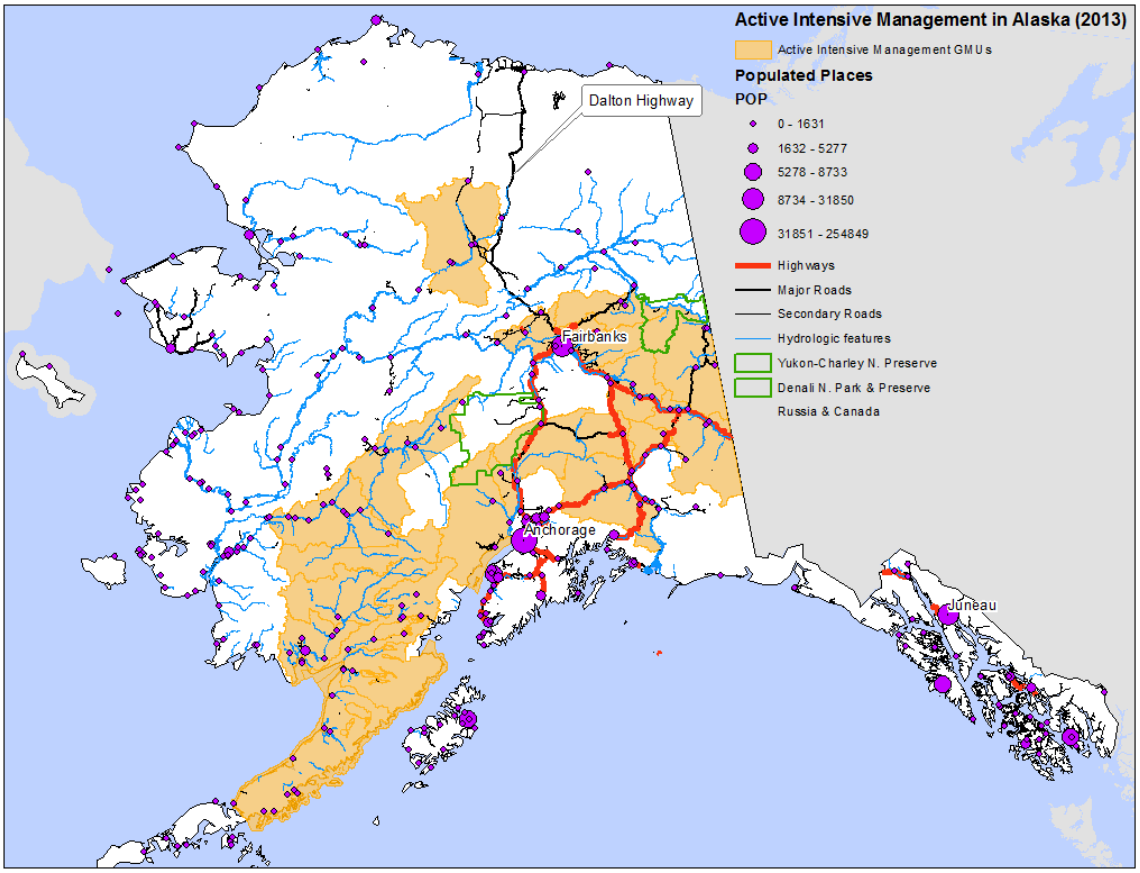

FIGURE 2.6: ACTIVE INTENSIVE MANAGEMENT IN ALASKA MAP

Predator control efforts generally focus on areas near roads, rivers, and population centers. Access simplifies hunting for and transporting large moose and caribou. This question of access highlights the importance of infrastructure.

Traditional perceptions and scientific studies indict wolves as a major limiting factor in ungulate population numbers (National Research Council, 1997). Bears, habitat carrying capacity, and human activities (e.g. hunting, infrastructure) similarly contribute to limiting ungulate population numbers (Schneider, Hauer, Adamowicz, & Boutin, 2010; National Research Council, 1997).

Bears are sometimes at the receiving end of predator control efforts, but bear-control is less common than wolf-control. One reason for this is that bears seem to invoke more cultural empathy than wolves in mainstream western society (Dingwall, 2001; Kellert, Black, Rush, & Bath, 1996). A second reason relates to major biological (especially reproductive) differences between wolves and bears (National Research Council, 1997). Bears reproduce much more slowly than wolves. Because of slow reproduction, it takes longer for bear populations to recover from predator control than wolf populations. Because wolves reproduce quickly, they can fill niches left by reduced bear populations, especially if wolves are not aggressively controlled at the same time. This can lead to fewer bears over a long time-horizon, but little overall reduction in predation. If primarily wolves are controlled, they can bounce back quickly if management desires. Also, when wolf population numbers are reduced, wolves' niche is unlikely to be filled by bears (in the short term) because of bears' slower reproduction rate.

Wolf-control cannot sustainably increase ungulate numbers if sufficient ungulate habitat (e.g. forage) does not exist (National Research Council, 1997). As mentioned above, opponents of wolf-control frequently suggest that proposed control areas lack sufficient ungulate carrying capacity (Van Ballenberghe, 2004; Medred, 2013). Proponents of wolf-control such as David James, ADFG Regional Supervisor, counter that nutritional analyses of ungulates are used to ensure ungulates have sufficient forage (personal communication, May 2013). Nutritional analysis in the context of management is discussed more thoroughly in 3.2.2.7. Lag time in manifestations of nutritional measures, and other factors further complicate the conversation (National Research Council, 1997).

The Alaska State Constitution mandates resources management "for the maximum benefit of [the] people" (Alaska Const. Art. VIII, §2). 'Maximum benefit of the people' lends itself to consumptive (e.g. hunting) leaning, and 'non-consumptive' (e.g. wildlife viewing) leaning interpretations. State law puts wildlife regulation in the hands of the BOG. The ADFG is responsible for Wildlife management responsibilities. The State Intensive Management Law (AS 16.05.255 (e)), further requires the BOG to adopt IM (e.g. predator control, habitat enhancement) before reducing human harvest. Alaska uses wolf-control as a method of fulfilling

legal obligations and social pressure for hunting opportunities. Institutions, stipulations and exceptions are more thoroughly discussed in context in Chapter 3.

Studies indicate the need for a large percentage of wolves (60-100%) to be removed from an area for years, to effectively boost ungulate (e.g. moose, caribou) numbers (Mech & Peterson, Wolf Prey Relations, 2003). Ungulate population and harvest objectives set at high levels, may require perpetual wolf-control (Hayes, 2010).

Lethal and non-lethal forms of wolf-control exist. Non-lethal wolf-control methods such as sterilization, diversionary feeding, and relocation of animals are somewhat less controversial than lethal methods (National Research Council, 1997). But these methods are generally considered too costly and too difficult to be effective (Regelin, 2002; Mech & Peterson, Wolf Prey Relations, 2003).

Aerial wolf-control is seen by managers as the most efficient and effective way to reduce wolf numbers sufficiently (National Research Council, 1997; Hayes, 2010). In the absence of a bounty, trapping and hunting removes insufficient numbers of wolves to meet management objectives. Even open bag limits and perpetual seasons appear insufficient (Hayes, 2010). In Alaska, wolf bounties were banned in 1984 (Sec. 29 Ch 132 SLA 1984), and have only seriously been revisited once. In 2007, a short-lived 'incentive program' was created to compensate public participants in aerial wolf hunts for the high cost of aviation fuel, in light of low pelt prices (D'Oro, 2007). The program was stopped by a judge within 10 days, and no payouts were made (D'Oro, 2007).

Poisoning was economic and effective (Hayes, 2010), but was banned after statehood (Regelin, 2002). Concern for negative externalities on other wildlife and the environment brought about the ban on poisoning as a wolf-control method (National Research Council, 1997). Concentrated ground efforts using snow machines to hunt wolves have also been attempted to mixed results (National Research Council, 1997).

Although all current means of wolf-control are to some extent controversial in Alaska,

aircraft related means appear most controversial. Simply the idea of shooting wolves from aircrafts strikes many as inherently cruel and unfair.

There are three types of wolf-control associated with aircraft:

- Aerial gunning, from a fixed-wing airplane or helicopter.
- Land and shoot. Wolves can be tracked from the air, but the plane must land before a wolf can be shot.
- Same day airborne, is the same as land and shoot, but the shooter must be at least 300 feet from the plane.

There were several arguments that appeared recurrently in my research. One argument against aerial wolf-control was that permitting the public to participate in land-and-shoot wolf-control is a defiance of the will of the majority of the Alaska public.

Congress passed the Federal Airborne Hunting Act (Pub.L. 92-159, § 1, 85 Stat. 480) in 1972. The law was a response to increased nation-wide awareness and negative response to Alaska's wolf-control program. The Federal Airborne Hunting Act banned aerial hunting except in cases of 'biological emergency' (i.e. to avoid the irreversible loss of a prey population). 'Biological emergency' is the loophole that the State of Alaska uses to circumvent Airborne Hunting Act prohibitions on shooting wolves from airplanes. The state interprets 'biological emergency' liberally, even issuing permits to the public to participate in land-and-shoot wolf-control (Alaska Department of Fish and Game, 2013).

Among wolf-control opponents there appears to be a preference for officials rather than the public to do the shooting, if a biological emergency exists. In 1996, the Alaskan public passed a citizens' initiative (Alaska Prohibit Airborne Hunting [Measure 3]) banning the practice of allowing the public to participate in aerial wolf-control. Through 'legislative tampering' the State Legislature overturned the initiative in 2000 (SB 267, 2000). A further voter "Veto Referendum" passed in November of the same year (Alaska Land-And-Shoot Referendum [Measure 6]) which

had the effect of vetoing SC 267. This vote was overturned by the legislature in 2003 (SB 155, 2003). Subsequent citizens' initiatives have been unsuccessful.

Several interviewees also expressed sentiments of disenfranchisement due to BOG makeup. The current administration appoints BOG members. BOG appointees almost always have a vested interest in hunting and trapping. It has been argued that this makeup fails to represent a cross-section of Alaska wildlife values; such as those of the approximately 80% of non-hunting Alaskans[3].

Economic arguments put forth against wolf-control include its high costs. These costs are sometimes contrasted with the high value of non-consumptive wildlife uses (e.g. photography, wildlife viewing, tourism). Factoring out cultural values in hunting, it has also been argued that simply providing other sources of protein (especially to remote, subsistence hunters) would be less expensive than boosting prey numbers through predator control.

Despite the elusiveness of exact price tags, the consensus is that wolf-control is expensive. Present wolf-control efforts are costly enough that ADFG is at the ceiling of available (and likely forthcoming) funding for these efforts (D. James, personal communication, May 2013).

Some opponents of wolf-control romantically view wolves as the embodiment of wilderness itself, and echo writings of Jack London and Aldo Leopold. Wolf-control opponents also frequently cite scientifically derived data to argue that wolf-control does not work for various reasons (Boertje, Keeck, & Paragi, 2010). Former Governor Knowles' three criteria for

[3] 80% was a number given by Wade Willis in a telephone interview (personal communication, May 2013). Based on the number of Alaska resident hunting permits purchased in 2012 (101,231), and the 2012 census estimate (741,449), the actual percentage of resident non-license holders is over 86%.

considering predator control appear frequently in wolf-control discourse. The three criteria are: that predator control must be cost effective, represent scientific scrutiny, and have broad public acceptability (National Research Council, 1997). Wolf-control opponents maintain that these three criteria should be a prerequisite for control efforts, and that the criteria are consistently ignored by the State.

Scientifically derived data are also used by wolf-control supporters to show the opposite of the above (Boertje, Keeck, & Paragi, 2010). Criticisms levied against the need for absolutely certain science are that it is a) virtually impossible to procure, b) cost prohibitive, and c) merely an obstructionist strategy (i.e. a mission impossible).

Wolf-control advocates also often consider themselves conservationists (Boertje, Keeck, & Paragi, 2010). One popular argument for boosting prey numbers through wolf-control is that wild game is superior to commercially available meat. Procuring and eating wild meat represents the continuance of a lifestyle and tradition. Commercially available meat is sometimes seen as product of cruel of factory farming techniques, whereas game lives in its natural state until being harvested (Sapontzis, 2012; Fröding & Peterson, 2011; Haefner, Dosman, Adamowicz, & Boxall, 2001).

Though Alaska specific, I believe that the preceding discussion is particularly important to bear in mind when considering the two Alaska, and the Western Alps case studies. Questions about how and how many wolves to remove are likely to surface once the Alpine wolf population passes a certain threshold. Impacts to wild and domestic prey, as well as human safety will likely determine that threshold. The conditions that existed when wolves were extirpated from most of Western Europe no longer exist. It will likely be physically and socio-politically difficult to maintain desired wolf abundance and density.

Safety-related rhetoric is a component of wolf management discourse in both Alaska and the Western Alps. Though the literature points to a low probability for human-wolf conflict (McNay, 2002; Linnell, et al., 2002), such conflicts when they occur are have a high social impact. Events

such as a school teacher being killed outside the Village of Chignik Lake whilst jogging (Butler, Dale, Beckman, & Farley, 2011) (Butler, Dale, Beckman, & Farley, 2011) draw massive amounts of attention. Though they will be rare, similar future events are inevitable and should not be discounted. High-impact, low-probability events have huge impacts on society and corresponding implications for policy-makers (Slovik, 1987), as well policy advocates. McNay and others present evidence that rabies has been a main cause of wolf aggression towards humans (McNay, 2002). At least two recent cases of rabid wolves in Interior Alaska (Boyce, 2013) keep safety concerns prescient, despite the statistically nanoscopic likelihood of negative wolf - human encounters.

2.2.2 Western Alps: Italy & Switzerland

Wolves were extirpated throughout most of Western Europe within the last 100-300 years (Breitenmoser, 1998) due to a combination of environmental degradation and human persecution. During the period of extirpation, in the trinational Alp region of Italy, Switzerland and France an increasing human population consequentially altered the landscape. Humans deforested large areas for fuel, and to open the area to agricultural uses (Breitenmoser, 1998). This land use change decreased habitat for wolves, and their prey (e.g. roe deer, red deer, ibex, chamois, wild boar) (Breitenmoser, 1998). Concurrently, there was a great dependence on wild game as a source of food for local humans (Breitenmoser, 1998). As prey availability declined, competition between hunters and wolves increased (Breitenmoser, 1998), exacerbating preexisting conflict between these two predators.

Newly cleared land was utilized largely for livestock (e.g. sheep, cattle, and goats). Wolves adapted to the changing habitat by increasingly preying on domestic animals. Wolf predation on livestock led to further escalating conflict between wolf and human populations (Breitenmoser, 1998). It also led to active efforts to exterminate wolves (Breitenmoser, 1998). The last known wild wolf in Switzerland was reportedly shot between 1800 and 1850 (Breitenmoser, 1998). The last known wild wolf was shot in France in 1937 (de Beaufort, 1987). When the first relevant wildlife conservation legislation, affecting wolves, was enacted in 1979 (Bern Convention) there was a remnant population of around 100 wolves in Italy (Lucchini, Galov, & Randi, 2004).

Italy's post World War II economic boom, and technological advances led to a shift in human populations from the agricultural countryside to cities. This process of rural to urban migration was mirrored in Switzerland and France (Bätzing, 1991). As the human population in rural areas decreased in size, forests began to reclaim previously agricultural areas. As forested habitat increased so did prey (Apollonio, Andersen, & Putman, 2010). The wolf range gradually expanded out of the Province of Abruzzo, Italy, where the remnant wolf population had been virtually confined (Breitenmoser, 1998). Wolves recolonized much of the Italian Alps, and eventually were seen in Switzerland in 1992 and France in 1996 (Valière, et al., 2003).

As discussed in Chapter 1, protective legislation at national and supranational levels presents some management challenges. One particularly important challenge is social resistance to wolf recolonization. Most resistance to wolf recolonization has been from hunters, and livestock herders.

Hunting in the Western Alps persists primarily as a sport or traditional activity. Subsistence hunting does not exist in the Alps as is does in Alaska. Accordingly, hunting regulations in Italy and Switzerland are geared towards sport hunting. Though not uniformly against wolf recolonization, hunters are vocal and engaged enough to be represented at high-level discussions (U. Breitenmoser, personal communication, May 2013; D. Gugolz, personal communication, April 2013).

For agriculturalists, sheep and goats are especially vulnerable to predation. Livestock vulnerability to predation is increased by practices that became standard in a predator free landscape (Breitenmoser, 1998). Livestock spend much of their time ranging freely and unsupervised (Breitenmoser, 1998). This practice is now considered 'traditional', and there is reluctance among livestock breeders to alter it. Employing protective measures, such as sheepdogs, can be cost prohibitive even with governmental subsidies (M. Schwery, personal communication, April 2013).

Besides practical difficulties, an emotional component is also at play. Despite much higher numbers of sheep killed by other factors (e.g. domestic dogs, weather events), wolves are often accused of threatening the industry and associated lifestyle. The informal institution of poaching has certainly slowed wolf recolonization. Nonetheless the trend is clearly in favor of a viable wolf population throughout the Alpine Arc (Marrucco & McIntire, 2010).

2.2.3 Comparison

Clearly there are some monumental, historical differences between the two regions of study. In the Western Alps, a wolf population that nearly vanished is on the cusp of recolonizing part of its historical range. In Alaska, a wolf population exists that is, and has been more-or-less naturally regulated since the beginning of memory. In both cases, wolves have become a noteworthy management challenge as a result of social, economic, and environmental trajectories. Generally, both cases also self-juxtapose rural, local, traditional perspectives against top-down, urban-based, environmental imposition.

2.3 Changing Attitudes Towards Wolves and Nature

Lopez and others have suggested that wolf folklore and mythology originating in historical Europe is part of Europeans' and North Americans' collective subconscious (Lopez, 1978). The big bad wolf at the door of Little Red Riding Hood and the Three Little Pigs is likely to have earned its poor reputation in part from the pastoralism-induced conflict outlined in Chapter 2. Whether caused by agriculture-induced landscape changes, historical rabies outbreaks, interpretations of Bible verses, a historical human propensity to create a pathological 'other' to separate humans from nature and subjugate it, or something else, the wolf's image has suffered. Positive cultural myths such as Remus and Romulus, the founders of Rome who were saved by a wolf, are infrequent. Anti-wolf attitudes were imported to the vast, American wilderness in need of civilizing (Nash, 2001). Settlers blazed across the continent logging and farming the frontier.

Even after conservation achieved a foothold in the United States, establishing national forests and parks, the wolf fared poorly. The NPS, for example, continued wolf-control into the

middle of the 20th Century. The international popularity of Jack London's The Call of the Wild (1903) and White Fang (1906) are a reflection of and partial cause of the turn in public opinion. Aldo Leopold's essay "Thinking Like a Mountain" published in A Sand County Almanac in 1949 (Leopold, 1979) stirred a romantic plea for wolves in the context of espousing the importance of an ecosystem view of resources.

Between 1939 and 1941, Adolph Murie studied wolf and Dall sheep interactions in the newly formed Mt. McKinley National Park. The Wolves of Mt. McKinley (1944) and other studies of his, led to the discontinuation of predator eradication programs in National Parks.

Though such simplifications are perilous, the modern environmental movement began in the 1960s (Melosi, 1993), and has been generally positive for wolves. In 1972 the United Nations (UN) created the UN Environment Program. A series of treaties followed, including the Convention on International Trade in Endangered Species (CITES) (1973), Bern Convention (1979), and the Convention on Biodiversity (CBD) (1992).

National programs such as the US ESA (1973) have shown a global trend in favor of protecting the environment and conservation of species including the wolf. Wolves are returning to their native range throughout the northern hemisphere. Public opinion of wolves in North America and Western Europe seem more positive than negative at present. This positivity is, of course, not universal. Some evidence points to an increase in negative attitude towards wolves in relation to wolf population expansions in the contiguous 48 states and Canada (Houston, Bruskotter, & Fan, 2010). Evidence also shows that rural communities especially frequently and vocally resist wolf conservation (Skogen & Krange, 2003).

CHAPTER 3 INSTITUTIONS, AGREEMENTS, & IMPACTS

3.1 INTRODUCTION

In Chapter 3, I present three case studies of transboundary wolf agreements. The first two cases take place in Alaska. The third case takes place in the Western Alps. In Alaska, I focus on sub-national, jurisdictional borders between federal lands managed by the NPS, and lands managed by the State of Alaska. In the Western Alps, I focus on the Italian - Swiss national border.

A discussion of relevant institutional contexts precedes the cases. Complete symmetry between case analyses proved ineffective. Instead, I tailored the analyses in such a way, that I hope clearly tells the stories of the agreements. Though structured differently, common analytical elements include:

- Cross-case-study comparable diagrams.
- Illustrative maps.
- Descriptions of related agreements.
- Analyses of the specific agreements chosen for close examination, including:
    - Discussion of the cessation of each agreement's functionality.
    - Reflections on the outcome.
    - Current and future implications for wolves, stakeholders, and the environment in a larger context.

3.2 Alaska Case Studies

3.2.1 Institutional Context[4]

3.2.1.1 Institutional Levels Affecting Wolves in Alaska

In figure 3.1, US federal components are shaded dark, State of Alaska components are white, collaborative components are a gradient between dark and light, and federal components created with input from the State are filled with a dot pattern.

[4] Both Alaska case studies share the same institutional context.

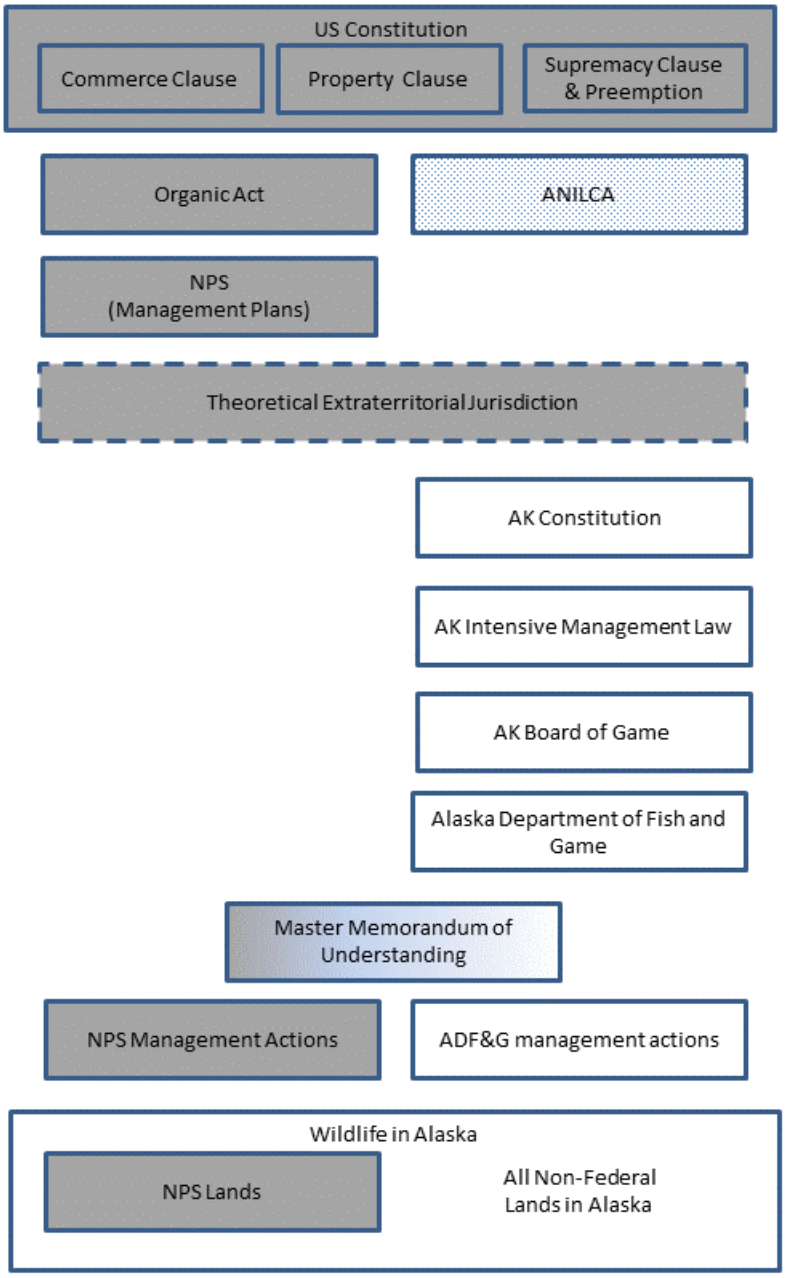

FIGURE 3.1: INSTITUTIONAL LEVELS AFFECTING WOLVES IN ALASKA

At the top of the institutional hierarchy affecting wolves in Alaska, is the US Constitution. This is the supreme law of the US, and it defines the powers of the government. The constitution gives Congress "the power to lease and make all needful rules and regulations respecting the territory, natural resources, and other property belonging to the United States" (US Const., Art.

IV, § 3, cl. 2). The Commerce Clause (US Const., Art. 1, § 8) is often relevant in Federal - State questions. The Commerce Clause explicitly gives Congress authority over interstate, international commercial activities, and those involving tribes. Through case law, the Commerce Clause's influence has been expanded to include even non-commercial, interstate natural resources (May, 2010).

The Property Clause (US Const., Art. IV, § 3, cl. 2) gives Congress jurisdiction to protect federal lands and property as it sees fit (Freyfogle & Goble, 2009).

According to the Supremacy Clause (US Const., Art. VI, cl. 2), if a State law is created that contradicts a federal law made within the bounds of Congress' authority, it is preempted by the federal law (Lurman & Rabinowitch, 2007). Federal law made to preempt state law, has the same effect; however, it should clearly express preemptive intent (May, 2010).

Below the Constitution box in the framework is the NPS Organic Act of 1916 (Organic Act)(16 USC § 1). The Organic Act established the NPS under the Department of the Interior (DOI), and makes the NPS responsible for making rules and managing properties under their purview in such a way that the purpose of establishing the park is met.

On the same level as the Organic act is ANILCA (1980). When oil was discovered on the north slope of Alaska, it was determined that a pipeline to an ice-free port (i.e. Valdez) would be the best way to move the oil to markets outside of Alaska. In 1971, ANCSA was created to address the immediate need to settle land claims with Native entities, the State of Alaska, and the Federal Government (Haycox, 2002). ANCSA stipulated a concrete land selection process within a given time period, taking into account access rights (Haycox, 2002). ANILCA expedited solutions to land claims issues (Williss, 1985). Through ANCSA all entities began divvying up Alaska in a complicated land selection process. As of 2013, the process was still not complete.

ANILCA created or revised 15 NPS properties within the State, and laid ground rules about state and federal interaction somewhat differently than the status quo in the contiguous 48

states (Williss, 1985). One notable example of differences between National Parks in Alaska and in the contiguous states is the maintenance of traditional activities such as subsistence hunting within National Parks. Some of ANILCA's complex and somewhat unusual directives for Federal and State management are discussed in context, where appropriate.

As mentioned above, Congress granted the NPS authority to create rules and regulations to manage lands under their purview in such a way as the foundational mandates are met. This is done via Management Plans. All further policies are to be based on the Management Plans (United States National Park Service, 2013).

At the next level is Theoretical Extraterritorial Jurisdiction. There is some precedent for the pursuance of extraterritorial jurisdiction under the Property Clause if a federal property's purposes are being endangered in a significant way from outside forces. This can also be found under ANILCA, wherein the Federal Government is responsible for guaranteeing subsistence opportunities for Native residents. If established goals (one of which is subsistence rights protections) are being endangered, a federal agency (e.g. the NPS) could invoke the Supremacy Clause and preempt Alaska resource management law with federal law. In both cases there is a preference for amiably settling disagreements or pursuing land trades before exercising blatant federal extraterritorial jurisdiction. Dave Mills, an NPS Subsistence Manager, told me "The bar would have to be set really high" (personal communication, May 2013) to pursue federal extraterritorial jurisdiction.

Next is the Alaska State Constitution. The State Constitution requires the State to manage natural resources for the maximum benefit of all Alaskans. Under the Constitution is the BOG which is responsible for setting regulations regarding wildlife in Alaska. The ADFG is responsible for providing science to the BOG, and managing fish and game resources in line with BOG regulations.

The Alaska IM Law (AS 16.05.255(e)-(g) and (j)) dictates that consumptive use of big game prey is the preferred use of big game (i.e. over viewing and other non-consumptive uses). Under

the IM law, game should be managed for sustained high levels of human harvest. The law also prevents the BOG from significantly reducing allowable harvest unless IM has already been undertaken. Outside of predator control, IM can consist of habitat improvement techniques, such as prescribed burns. Determinations that IM would be ineffective, inappropriate (such as on NPS lands), or against the best interest of subsistence uses exempt the BOG from IM mandates.

The Master Memorandum of Understanding (MMoU) was created as one of several Master Memoranda of Understanding under ANILCA between federal agencies and the State of Alaska (United States National Park Service, 2006). This is discussed in more detail below.

The ADFG is responsible (or at least co-responsible) for the management of all wildlife in Alaska. The department also undertakes specific management actions (e.g. wolf-control). An exception to this is when State policy contradicts a federal policy on federally owned land. In these cases, the NPS has ultimate control through a number of means, even though the State has authority in the absence of a contradiction (Lurman & Rabinowitch, 2007).

3.2.1.2 Master Memorandum of Understanding: Agreeing to Agree (& Disagree)

In the wake of ANILCA, each of the federal land management agencies created an MMoU with the ADFG. The MMoU between the ADFG, and NPS was signed by representatives of both agencies in 1982. It is a framing document stating recognition of shared as well as contrasting responsibilities between the two agencies. The MMoU set ground rules for cooperation, such as in permitting (e.g. entrance onto lands in the context of research), consulting/ informing (e.g. when developing policy that may affect goals of the other agency), resolving disagreements within agency hierarchies before publicly expressing a position, and meeting annually.

The MMoU "establishes procedural guidelines by which parties shall cooperate, but does not create legally enforceable obligations or rights." Almost all representatives with whom I spoke, from both the ADFG and the NPS wanted to ensure I was aware of and familiar with the MMoU. At the same time, no representatives had invoked it forthrightly in any agreement or

interagency conversation. Further, no one identified specific portions of the MMoU they thought were particularly salient or applicable. Cognizance of the general principle was iterated and reiterated, but no agency representatives ventured to, as one contact put it "embark on a theoretical treatise" as to what extent the MMoU might have the ability to influence collaborative management discussions or agreements (J. Yuhas, personal communication, May 2013). The process of implementation, said the ADFG's Brad Palach, "should just be a local phone call" (personal communication, April, 2013).

The MMoU is as important as it is unimportant. The clear majority of interviewees stressed the non-legally binding nature of the MMoU, though no contacts wanted to have defied the precepts of the MMoU. This sort of latent, omnipresent trans-agency agreement seems relevant at the (ADFG) management level, but the ADFG does not make its own regulations. If the MMoU applies to the regulatory (BOG) level, transboundary managemental coherence with the NPS should/ could be better.

Attempts to gauge the relevance of the MMoU at the BOG level unearthed an inconclusive yet interesting dispute. One representative for the ADFG posited a clear delineation, with the BOG as an independent entity from the ADFG (B. Palach, personal communication, April 2013). An anti-wolf-control interest group representative strongly disagreed and explained the inherent organizational connectedness of the BOG and ADFG (W. Willis, personal communication, May 2013).

One further example of divergent conceptualizations can be found in the BOG, 2010 Interior Region Meeting proposals (the proposal process is discussed in more detail below) (Alaska Board of Game, 2010). The Anchorage Fish and Game Advisory Committee stated in a proposal to expand the Denali Wolf Buffer that the ADFG has "an obligation to adapt management on adjacent lands" under the MMoU and Denali's mandates. I called the Anchorage Fish and Game Advisory Committee Board's Regional Coordinator, Sherry Wright. Wright seemed surprised at the inclusion of the reference to the MMoU in the proposal and referred me to an ADFG Federal Subsistence Liaison Team Leader (personal communication, May, 2013). Jennifer Yuhas, the

ADF&G Federal Subsistence Liaison Team Leader, stated that "The signing agencies are of course cognizant of their existing agreements, such as the Master Memoranda of Understanding," but was unable to discuss "the document's 'ability' to influence collaborative management decisions," except to say that it is "dependent upon the implementers of that agreement at any given time" (personal communication, May 2013). Wright also recommended looking into the contemporary composition of the Advisory Committee and consulting those members. Wade Willis, a member of the committee at that time (2010), and a vocal critic of many Alaska predator control programs shared a different point of view.

Willis postulated an obligation on the ADFG's part to "uphold the spirit of the MMoU" (personal communication, May, 2013). Continuing, Willis insisted the BOG is part of the system, inseparable from ADFG and likewise obligated to take the MMoU into account in decision making (i.e. ADFG and BOG are not actually separate entities).

3.2.1.3 Entity Relationships in Alaska Wolf Policy

Understanding and presenting the complex entity relationships in Alaska wolf policy proved complicated. The Entity Relationships in Alaska Wolf Policy diagram (Figure 3.2) illustrates a simplified version of the system.

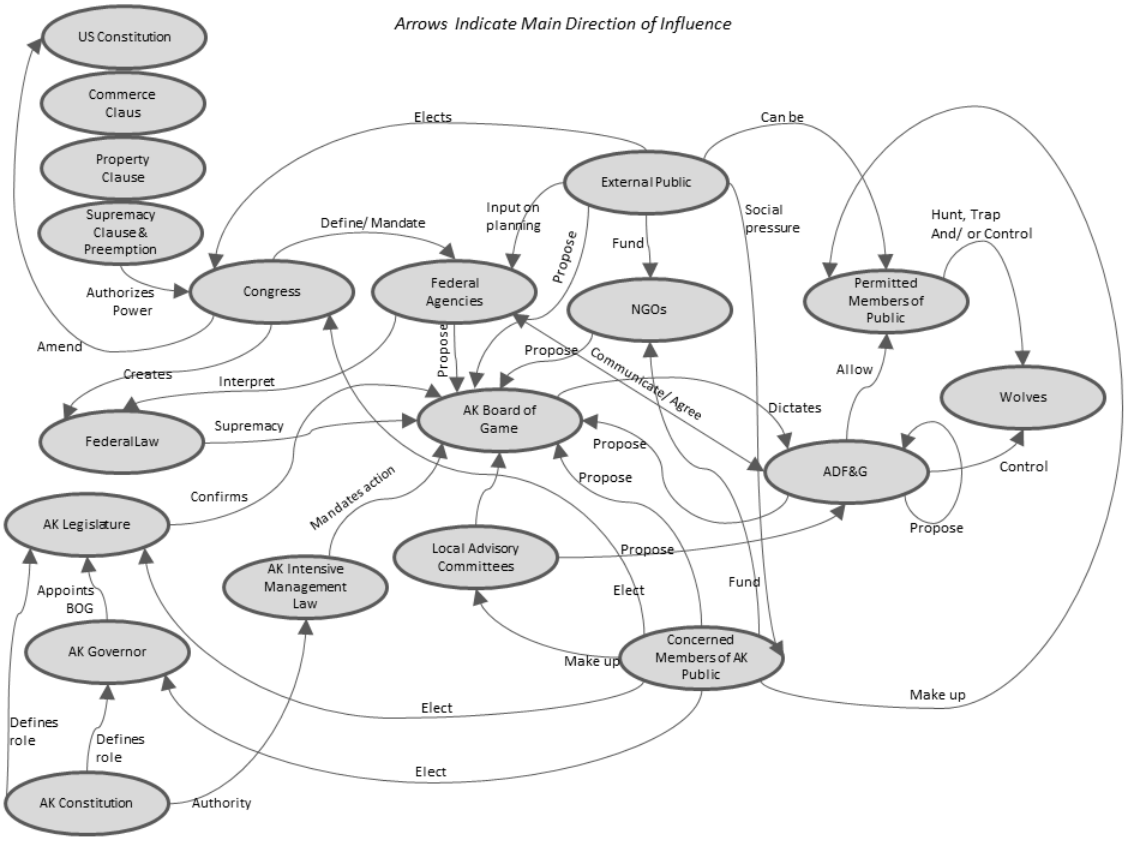

FIGURE 3.2: ENTITY RELATIONSHIPS IN ALASKA WOLF POLICY

Ovals represent the main components. Arrows represent the main direction of influence. I intended words and short phrases associated with each arrow to describe the relationship between two entities. Word choices do contain implications of power relationships. In reality, explicit mono-directional power relationships (almost?) never exist. Redundancy between entity relationship diagrams and institutional levels diagrams is intentional. They are two different ways of illustrating the same system to show different aspects of it.

The US Constitution gives Congress authority, especially through: the Commerce Clause, Property Clause, and Supremacy Clause and Preemption to create federal laws which are supreme over conflicting state laws and regulations such as regulations created by the BOG. It also gives Congress the authority to initiate an amendment to the Constitution, and create federal agencies, whose direction it defines. When federal agencies interpret their

Congressional mandates, those policies also become federal law. The public is also invited to provide input in the crafting of federal agency management plans. Public input is influential in planning, but non-binding.

The Alaska Constitution gives authority to laws such as the IM Law, which the BOG must follow in their regulatory actions. The Alaska Constitution also defines the roles of the Governor of Alaska, and the Legislature. The Governor has the power to appoint the members of the BOG, but his or her appointment must be confirmed by the Legislature. Concerned members of the Alaskan public can elect the governor and legislature based on their policy direction. The BOG accepts regulatory proposals from Local Advisory Committees (made up of local experts), federal agencies, the American public in general, NGOs, and the ADFG. Local Advisory Committees are normally a pro-hunting distillation of concerned members of the Alaskan public. Local Advisory Committees can propose to the ADFG as well. The ADFG effectively propose regulations to themselves before presenting them to the BOG.

Both concerned members of the Alaskan public and the public at large can nudge NGOs in various directions by providing or withholding (normally financial) support.

The BOG considers all proposals and dictates management action to be executed by the ADFG. ADFG can consult with federal agencies before undertaking wolf-control on their own, and/ or by permitting members of the Alaskan public to hunt, trap, and/ or participate in other means of wolf-control. Concerned (i.e. interested) members of the Alaskan public are eligible to receive permits to participate in aerial wolf-control.

3.2.2 Agreement 1 - Yukon-Charley Rivers National Preserve & State of Alaska

3.2.2.1 Case Specific History

Pre-historically, ancestors of the Han Athabaskans inhabited the area presently proximal to Yukon-Charley National Preserve (Yukon-Charley) (United States National Park Service, 2013). Fur traders on the Yukon River appeared in the mid-1800s, then miners and missionaries. Small-

scale mining, using laborious hand methods began before and continued after large-scale dredging. Large-scale mining lasted from the 1930s to the beginning of World War II (United States National Park Service, 2013).

Geographically, Yukon-Charley is located in interior Alaska. The Yukon and Charley rivers, which meet in the preserve have long been a winter and summer transportation route in the region. The preserve, established by Congress through ANILCA in 1980, is 10,225 square km, and borders Yukon, Canada on one side, as well as state land, and a small portion of the Steese National Conservation Area (Bureau of Land Management [BLM]).

The Preserve is divided by three State GMUs: 25B, 25C, and 20E, and borders 20B, and 20D. Circle (pop. 61), Central (pop. 135), and Eagle (pop. 71) (Alaska Department of Labor and Workforce Development, 2010) are the main population centers close to the Preserve. Several smaller communities and some private land exist within the Preserve boundary. The NPS field office is in Eagle, but the official Preserve headquarters is in Fairbanks, around 580 road kilometers away. Eagle is one of two Alaskan towns that had produced official proclamations after the ANILCA-related designation of protected federal lands (The other town is Cantwell, which is very close to the second case study [Denali] study area). The proclamations stated that the towns would not support NPS authorities, enforce NPS regulations, and would shelter individuals who broke the regulations (Shapiro, 2012). These proclamations highlight local resistance to federal land management.

Fairbanks is where a large proportion of people, who hunt in and around the preserve are based. Although remote, Yukon-Charley is more accessible by car (via the aforementioned towns) and boat than many places in Interior Alaska. Like much of Alaska the Preserve is part of a greater region of largely unimpacted and unfragmented habitat, maintaining a full suite of native flora and fauna.

According to Yukon-Charley Superintendent Greg Dudgeon (personal communication, April, 2013) there was an attempt during the land selection process to follow logical ecological

demarcations; however, State and Native entities had temporal prerogative. For Alaska and Native entities, the land selection process was (and in some cases still is) also complicated. Hence, the borders of the Preserve are a combination of natural, and geometrical, artificial borders with both concave and convex portions (see Figure 3.3).

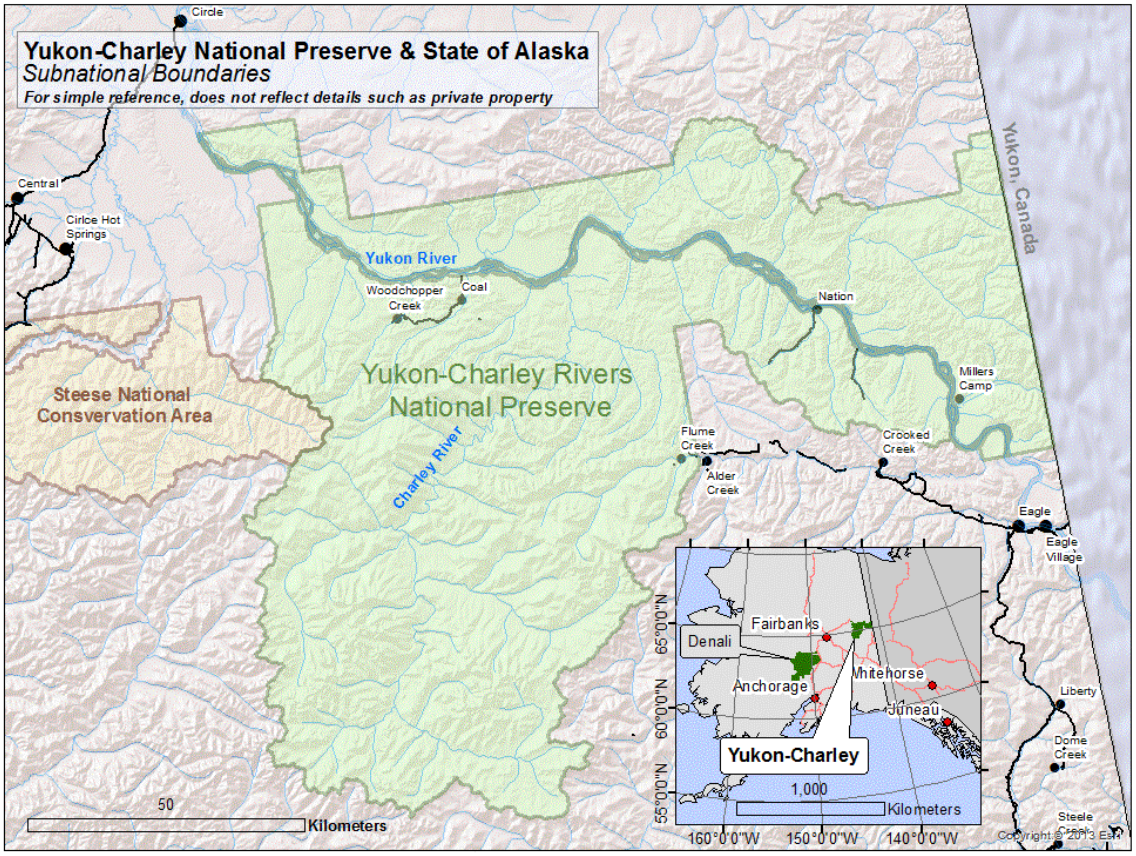

FIGURE 3.3: YUKON-CHARLEY CASE STUDY DETAIL MAP

These concave portions are particularly important for the agreement between the State of Alaska and Yukon-Charley. The 'notch' south of the Yukon River, is where wolves taken in State predator control efforts most severely affects 'Preserve packs' (discussed below); thus affecting other Yukon-Charley resources, research, and management goals.

Further complicating transboundary wildlife management implications, the southern lobe of the Yukon-Charley is located in the middle of the Fortymile Caribou Herd calving ground (see Figure 3.4).

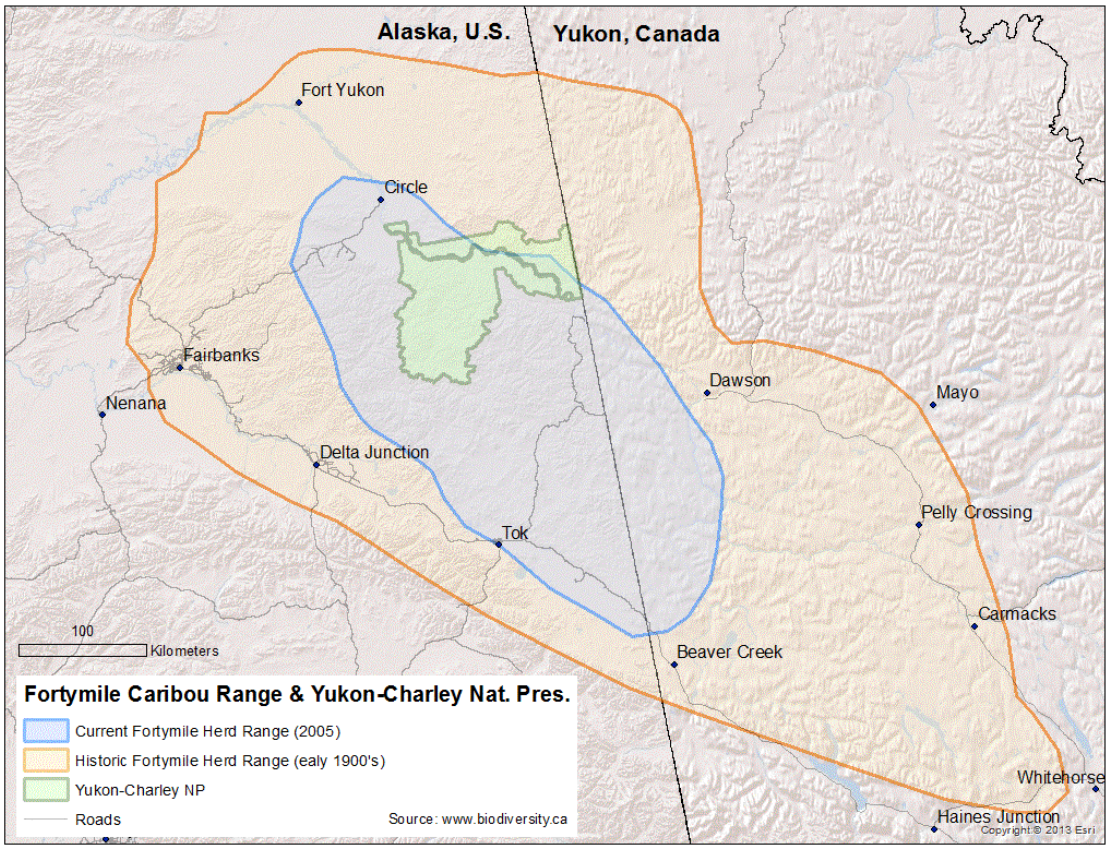

FIGURE 3.4: FORTYMILE CARIBOU RANGE & YUKON-CHARLEY NATIONAL PRESERVE MAP

Discussed in more detail below, State predator control efforts focus on the area around the calving ground to restore and maintain the caribou herd. In the words of ADFG Regional Director David James: "It's like a divine joke. The importance and location of the Fortymile Herd and the location of the Preserve… there couldn't be a better setup for a conflict" (personal communication, May 2013).

3.2.2.2 PREDECESSOR TO AGREEMENT (FORTYMILE PLAN CONSENSUS PROCESS)

Details of the Fortymile Plan Consensus Process have been thoroughly and eloquently recorded elsewhere (Todd, 1995), however, some background is necessary to understand the agreement to limit State wolf-control impacts to Yukon-Charley wolves (examined in depth for this case study).

First, there are technical similarities between this plan and the agreement discussed below. Technical similarities most relevant to both this predecessor agreement and the agreement below can be seen in strategies to minimize impact to Yukon-Charley wolves when conducting predator control. Second, personal and specific-level interagency relationships developed significantly in the timeframe of the Fortymile concensus process. David James, ADFG Regional Supervisor, said when asked about the relationship about the two agreements "You should know by now Brett, everything is related" (personal communication, May 2013). How everything is related however, is complicated.

Among interviewees from both the ADFG and the NPS, the consensus is that during the Knowles (Democratic) administration (1994-2002) the political climate was more conducive to collaboration between state and federal agencies than it has been since. This story begins in 1994, when Dave Mills was Superintendent of Yukon-Charley. Mills first became involved in Yukon-Charley and State of Alaska discussions during the year-long planning process for the Fortymile Caribou Herd Management Plan. The development of the plan, initiated by the ADFG and supported by the NPS, BLM, and US Fish and Wildlife Service (FWS), was facilitated by conflict resolution specialist Dr. Susan Todd.

The planning processes was intended to involve as many stakeholder groups as possible at the table, and find consensus among all parties to reverse the trending decline of the Fortymile Caribou Herd. As mentioned above, Yukon-Charley intersects a large portion of the herd's calving ground. Calving ground is important to a herd. Sufficient calves need to be born and survive to adulthood to perpetuate the herd and maintain its size. Wolf and bear predation are the primary limiting factors to recruitment (National Research Council, 1997).

The main foci of the plan were: Maintaining habitat quality, limiting human harvest, decreasing predation (i.e. from wolves and bears), monitoring effectiveness of measures, increasing public awareness, and creating an example for public participation in the future.

A number of wolf packs were identified as having a primary range within Yukon-Charley. Other packs and the caribou herd's territories also intersected the preserve. Mills' role as superintendent was to manage Yukon-Charley as intended by Congress. This management included upholding NPS policies, and interacting with such agencies as the ADFG at local levels.

Based on the plan, the ADFG engaged in non-lethal wolf-control from 1997-2001. This involved sterilizing Alpha animals and moving sub-Alpha animals to other areas to decrease the overall number of wolves and predation on caribou in the Fortymile region. As discussed in 2.2.1.1, this non-lethal control and was far less controversial, and far more expensive than lethal wolf-control.

Mills and James explained that during this period, although wolves could still be hunted and trapped within the Preserve boundaries, there was a negotiated agreement between the NPS and the ADFG that sterilization and relocation would not be done on Yukon-Charley wolves (personal communications, May 2013). The ADFG agreed that packs identified as having their primary range within Yukon-Charley would not be 'treated' (i.e. sterilized and/ or relocated).

A number of factors went into identifying a wolf pack's primary range. Factors included denning locations, time spent within Yukon-Charley's boundaries, and movement patterns. The process, according to Mills was "pretty difficult on everybody," (personal communication, May 2013) but the goodwill and mutual respect among participants from both agencies remains apparent even now in my interviews. There seems to be a nostalgic undercurrent regarding past cooperation. This approach came to a stop in 2001. As Mills put it "Predator control is expensive, but treatment is way more expensive" (personal communication, April 2013), James confirmed this. In contrast to the Fortymile Caribou Herd *Management* Plan subsequent Fortymile Caribou plans have been titled Fortymile Caribou Herd *Harvest* Plans, a meaningful semantic difference. No interviewees expressed awareness of earnest, official efforts to bring the diverse stakeholder audience back to the table.

There was a lag time in the early 2000s before wolf-control became a concern for Yukon-Charley management again. Pushback against wolf-control in the form of two citizens' initiatives banning and re-banning public land-and-shoot hunting (see 2.2.1.1) slowed wolf-control efforts. According to Mills the pushback translated into limited ADFG helicopters and personnel being used in wolf-control (personal communication, April 2013). Wolf-control at this time focused on the Fortymile area near Tok. This area, far from Yukon-Charley was the focus of wolf-control efforts despite the desire by ADFG to remove wolves closer to the Yukon-Charley; "gas is expensive," Mills postulated as a reason for basing ADFG wolf-control efforts near Tok (personal communication, April 2013).

3.2.2.3 Agreement: Minimize State Wolf-Control Impacts on Yukon-Charley Wolves

According to David James, before 2009 most wolf-control was carried out by private hunters and trappers. James referred to this as the "Private Caribou Protection Plan" (i.e. private citizens protecting caribou from wolf predation). In some areas, according to James, permitting public aerial wolf removal is effective. He also stated that this was not so in the Fortymile region due to its relative remoteness. In order to meet wolf removal goals, ADFG aerial action became imminent. James saw the immediate potential for conflict with the NPS.

In spring of 2009, James called Greg Dudgeon, who had recently succeeded Dave Mills as Superintendent of Yukon-Charley. The idea, according to James was to "stretch both mandates as close to the boundary as possible" to "live peacefully" (personal communication, May 2013). Greg Dudgeon remembers a call on a Friday in April or May. ADFG was planning on conducting aerial, fixed wing gunman, wolf-control on State managed lands adjacent to Yukon-Charley that weekend (G. Dudgeon, personal communication, April 2013).

In spring 2009, ADFG's plans were to remove 60-80% of wolves in the 48,563km2 Fortymile region. The Fortymile region includes a large portion of Yukon-Charley. Removing this number of wolves can theoretically be done without entering Yukon-Charley land or airspace because of wolves' transboundary nature (i.e. wolves crossing the border onto State land), and such boundary features as the notch mentioned above. "We're talking about wolves in there chewing

on caribou calves" David James quipped, also noting that removal goals have up to present been unattainable.

David James offered Greg Dudgeon a completely informal agreement. Both James and Dudgeon confirmed that records for the agreement are unavailable as conversations were one-on-one. The offer consisted of the following protocol:

- ADFG would remove all telemetry gear from helicopters and planes used in the wolf-control effort.
- ADFG would hire a 'main plane'.
- The main plane would have NPS research wolf radio-collar frequencies, supplied by Yukon-Charley.
- 'Spotter planes' would look for wolf tracks (in the snow) and find packs.
- Once a pack was located, the main plane would be called.
- The main plane would scan for NPS radio collar frequencies.
- If NPS frequencies were found, the pack was considered a Yukon-Charley wolf pack and flagged.
- If NPS frequencies were not found, the pack was to be removed.
- ADFG would use helicopters to shoot wolves. Shooters would "do their best" not to shoot flagged, radio collared wolves.

This agreement allowed David James to potentially remove the percentage of wolves required by the BOG. Protecting the entire pack, conversely, would not have allowed ADFG wolf-control efforts to remove the required percentage of wolves set out by the BOG. Whether or not the targeted number of wolves can be removed is one thing, but not even attempting to remove this quantity of wolves would have been illegal on the part of ADFG (D. James, personal communication, May 2013).

For Greg Dudgeon, this was an opportunity to support Yukon-Charley's mission to provide for natural processes to evolve, and to observe rather than manipulate (G. Dudgeon, personal

communication, May 2013). Dudgeon was interested in protecting wolves with a home range in the preserve, especially those viewed by Yukon-Charley as packs vulnerable to ADFG wolf-control. The NPS also had a 16 year ongoing radio-collared wolf study. NPS shared collar frequencies and information on the Alpha animals and packs with ADFG (G. Dudgeon, personal communication, April 2013).

The State cannot legally remove wolves within Yukon-Charley without NPS permission. The incentive for the State to agree was according to David James, to "play well in the sandbox", and prevent retaliatory hunting closures on Yukon-Charley lands (D. James, personal communication, May 2013). He feared closures would anger the "blood and guts group" (i.e. hunters). Further, wolf closures on Yukon-Charley lands would prevent hunters from removing wolves within the preserve. Wolves hunted and trapped by private citizen within Yukon-Charley assisted with facilitating recovery of the Fortymile herd (D. James, personal communication, May 2013).

3.2.2.4 Cessation of the Agreement

The second year of the agreement was 2010. Again, David James called Greg Dudgeon before the wolf-control effort was to begin (D. James, personal communication, May 2013; G. Dudgeon, personal communication, April 2013). Again, the telemetry and pack information was provided to the ADFG, as was according to Dudgeon, radio-telemetry equipment.

In the days following the initial contact, David James called Dudgeon to inform him that ADFG had killed all four wolves from one pack, and that two of those had radio collars (D. James, personal communication, May 2013; G. Dudgeon, personal communication, April 2013). Shortly thereafter, Dudgeon granted an interview to Tim Mowry, a reporter with the Fairbanks Daily News-miner (March 18, 2010), and was quoted as saying "We asked that all collared animals and packs with them be avoided, (the ADFG) decided to do what they were going to do and in this case a pack has been eliminated" (Mowry, Alaska, federal officials at odds over shooting of Yukon-Charley collared wolves, 2010) David James was also quoted as saying the killing of collared wolves was a mistake, that a procedure had not worked properly and was a result of

"some confusion on the part of staff," "some complicated factors," and possibly a result of collar malfunction or misinterpretation of radio frequencies (Mowry, Alaska, federal officials at odds over shooting of Yukon-Charley collared wolves, 2010).

A series of back and forth Newsminer articles followed (Mowry, Alaska preserve looks for answers in wolf kills, 2010; Mowry, State, feds still spar over Alaska wolf kills, 2010; Mowry, State, federal officials pledge to work together after Alaska wolf kill, 2010). Dudgeon told me that he felt misrepresented as trying to make the State look bad. James simply said that the "Park Service was pissed off" (personal communication, May 2013). David James halted wolf-control adjacent to the park until the issue could be sorted out. Greg Dudgeon closed general hunting and trapping within the Preserve (Mowry, Park Service closes sport hunting, trapping of wolves in Yukon-Charley preserve, 2010) to respond to a "sudden drop in already precarious Preserve wolf population numbers" (personal communication, April 2013). Both James and Dudgeon agreed that the media "always gets it wrong" (D. James, personal communication, May 2013).

The explanation provided by David James about the circumstances corresponds loosely with the Newsminer reports. James told me that the spotter had seen a pack with two collars, and called the main plane. The main plane was unable to retrieve a signal and concluded that the collars were defunct, and probably from another, past, study. The decision was made to remove the wolves. It turned out that the collars were live, but that the frequencies had not been transcribed properly. Neither James nor Dudgeon addressed culpability for the transcription error.

In 2011, communication had broken down. Greg Dudgeon saw the "whole thing [devolve] into a Federal versus State thing" (personal communication, April 2013). David James had assumed the same type of agreement as the preceding years would continue (personal communication, May 2013). Inconclusive talks ensued. Ultimately, according to James, the NPS wanted more protection for the wolves than ADFG could concede. Both parties expressed a

deep disappointment that the agreement did not succeed. Both also blamed conflicting mandates. At least publicly each understood the other's dilemma.

3.2.2.5 INSTITUTIONAL ANALYSIS

Figure 3.5 displays the agreement on the institutional levels framework introduced with Figure 3.1.

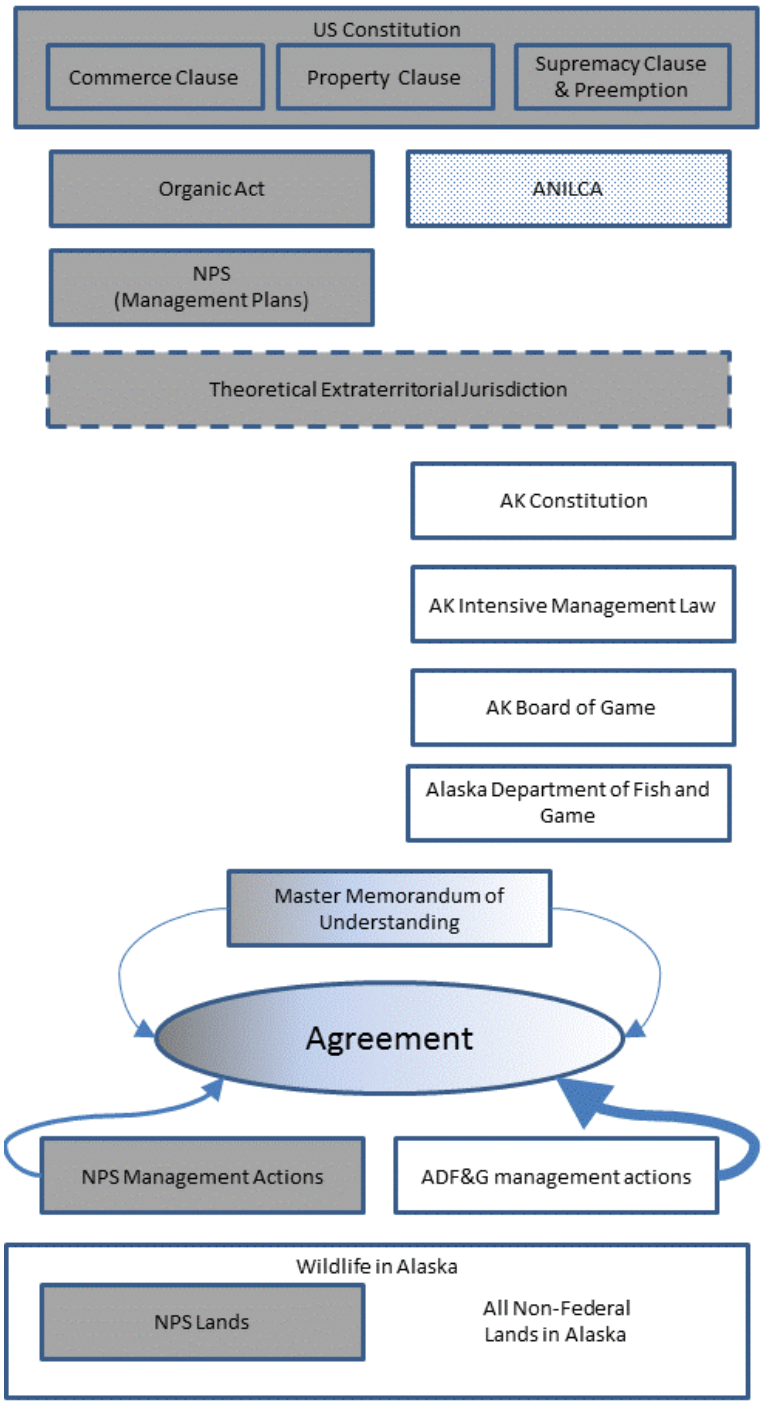

FIGURE 3.5: INSTITUTIONAL LEVELS IN YUKON-CHARLEY AGREEMENT

The arrows here represent influences in the agreement. Although the MMoU is not explicitly implicated, the main principles are represented. The agreement took place at the agency level, with stronger input from the ADFG. The ADFG both conceived of the agreement and had the primary power to extinguish it. NPS management's end of the agreement was to share radio-telemetry frequencies and equipment.

Figure 3.6 is a modification to the Entity Relationships in Alaska Wolf Policy diagram (Figure 3.2).

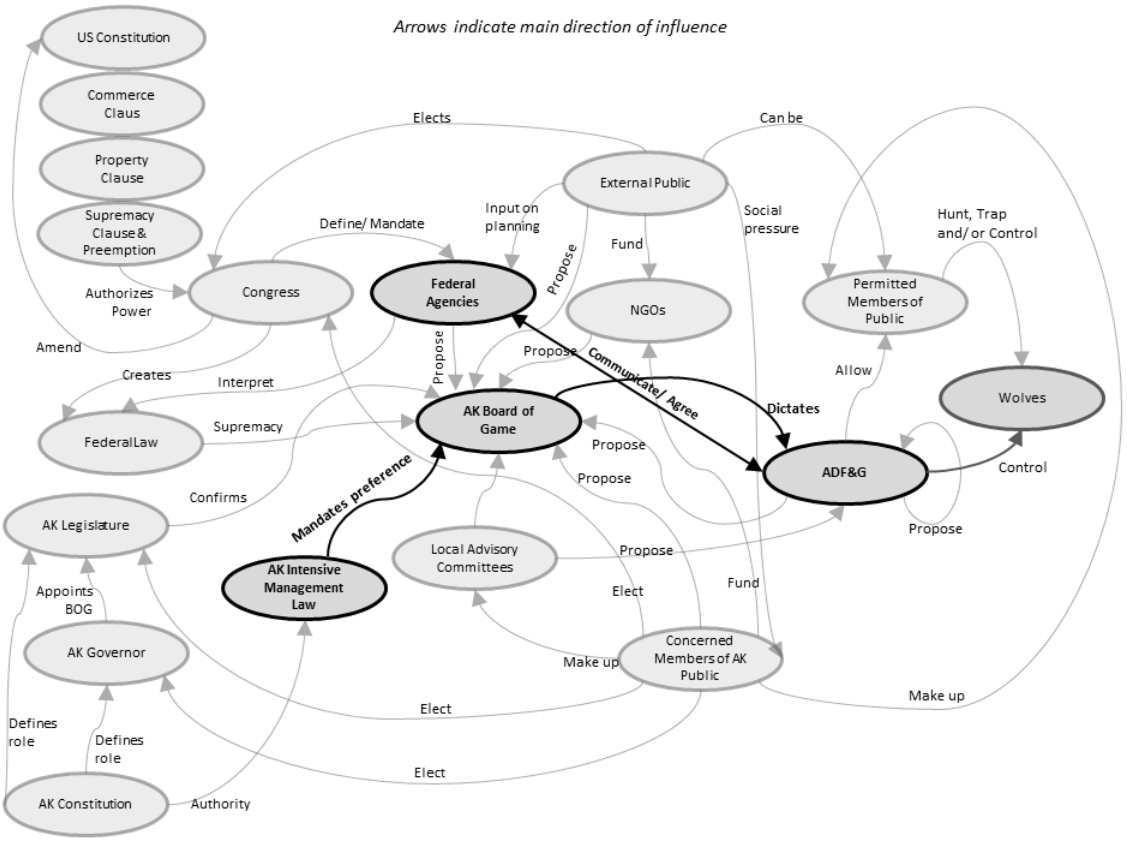

FIGURE 3.6: ENTITY RELATIONSHIPS SPECIFIC TO YUKON-CHARLEY AGREEMENT

Figure 3.6 highlights the entities and relationships involved in the crafting, execution, and eventual cessation of the agreement. David James and Greg Dudgeon were able to circumvent many of the normally active entity relationships. The BOG was mandated by their interpretation of the IM Law to direct the ADFG to engage in wolf-control. The NPS agreed to the action based

on Yukon-Charley management's interpretations of federal mandates. Yukon-Charley facilitated the agreement in practical ways.

3.2.2.6 DISCUSSION

David James and Greg Dudgeon stressed that the agreement took place in a tense political climate. Both also thought that the political climate now (spring 2013) is even worse. James further confided that the agreement simply could not happen in the current political climate (personal communication, May 2013). My interviews and the Newsminer articles dated March 18, 2010; March 19, 2010; March 27, 2010; March 30, 2010; and April 16, 2010, shine some further light on the reasons the agreement ultimately failed. First, disagreements arose as to the exact terms and execution of the agreement. The informality and lack of documentation necessary for the agreement to be created meant there was nothing to reference in strained discussions. Second, the agreement's level of separation from institutional structures meant no venue for grievances existed. Finally, when the two individuals who had brokered the agreement could no longer constructively communicate, no organizational framework was in place to sustain the agreement.

While the value of the agreement for Yukon-Charley was clear (i.e. protection of Preserve wolves), the value for the State is less clear. On one hand, Greg Dudgeon not accepting the same agreement the third year seems obstinate; the classic 'give him an inch and he'll take a mile'. David James' insistence of offering an agreement seems almost altruistic. On the other hand, Yukon-Charley taking part in the agreement, even to protect some preserve wolves, contains a latent stamp-of-approval from the NPS on an Alaska predator control effort.

3.2.2.7 IMPLICATIONS

I asked David James if there were any active relicts of the agreement. He explained the 'Judas Wolf' strategy of predator control. In this strategy, one wolf is collared. The collared wolf goes back to its pack. State biologists follow the signal and "take out the pack," but leave the Judas Wolf. The Judas Wolf joins a new pack; wash-rinse-repeat. Present policy for wolf-control efforts on lands adjacent to Yukon-Charley is similar insofar as instructions are to leave one collared

wolf in each pack. The exception to the similarity is that no Judas wolves are placed in Yukon-Charley packs, and preserve packs are not targeted. Otherwise predator control goes "right up to the line" (D. James, personal communication, May 2013).

Yukon-Charley outreach suggests that preserve wolves have been so reduced by wolf-control efforts outside of its boundaries that they no longer represent a healthy, natural population (United States National Park Service, 2013). At the same time, the 2012-2018 ADFG Fortymile Harvest Plan calls for continued wolf-control carried out by private citizens and supplemented by ADFG biologists as necessary to meet regional IM goals for caribou harvest. Additionally, the 2012-2013 ADFG Wolf Predator Control Programs supplement (Alaska Department of Fish and Game, 2012) shows wolf-control area boundaries encompassing roughly three quarters of the Yukon-Charley.

ADFG wolf-control capacity and caribou habitat carrying capacity may become game changers in the region. Despite the Fortymile Caribou Herd's importance as a cultural resource to both Alaskan Native and Yukon First Nations, wolf-control is expensive. While many interviewees confirmed the costliness of wolf-control, David James went into further detail. James said bluntly, that the ADFG cannot handle more, active predator control programs than they have now (personal communication, May 2013). Not only can there be no additive predator control programs under the present budget, but ADFG has been told to expect austerity over the next two to three years, James said.

James additionally spoke about carrying capacity thresholds in the Fortymile region. He posits, that recent nutritional analyses indicate an upper limit of forage availability for the Fortymile herd. James touted ADFG's one-hundred percent success rate when asking BOG to modify "ridiculous" population objectives for caribou (personal communication, May 2013). The implication would be that Fortymile caribou populations are approaching their habitat's carrying capacity, and when they reach that biological threshold wolf-control will be reduced. This would functionally be true regardless of higher-level (e.g. BOG), political proclivities.

Yukon-Charley is a remote place. Many of the small populated places within and around the preserve do depend on wild game for food. Many of these populations also depend on wild game as part of a way of life (United States National Park Service, 2013). For these human populations the increasing caribou herd is generally seen as positive (Van Lanen, Stevens, Brown, Maracle, & Koster, 2012). The NPS could (and has) closed Yukon-Charley to the hunting of one or more species, including wolves and bears (Mowry, Park Service closes sport hunting, trapping of wolves in Yukon-Charley preserve, 2010). These closures further strain already tense relationships between the NPS and ADFG. Also, despite the Yukon-Charley's lack of prominence in the public eye (e.g. in comparison to Denali, the location of the following case study), it is one of a number of examples of NPS and State conflict over the topic of wolf-control. Encampments on both sides of the proverbial river will be interested in the evolving situation.

3.2.3 Agreement 2 – Denali National Park & State of Alaska

3.2.3.1 Case Specific History

Although the region around Denali National Park and Preserve (Denali) has been inhabited by humans for more than 11,000 years, the high altitude and severe winter conditions were prohibitive to permanent settlement within what is now the Park and Preserve. Athabascan peoples are thought to have been in the region 1,000 to 15,000 years ago. In more recent times Koyukon, Tanana, and Dena'ina People inhabited the Park region (United States National Park Service, 2013).

What is now Denali National Park and Preserve was conceived when Charles Alexander Sheldon became concerned that development was endangering Dall sheep in the region (United States National Park Service, 2013). He petitioned Congress and the Alaskan people to create a preserve for the species. This led to the establishment of the original Mount McKinley National Park in 1917. In 1980, through ANILCA, Mt. McKinley was incorporated into the expansive Denali National Park and Preserve, which is now over 24,500 km2 (United States National Park Service, 2013).

Denali's borders are primarily artificial geometric borders, including a concave notch at the northeast of the Park (see Figure 3.7).

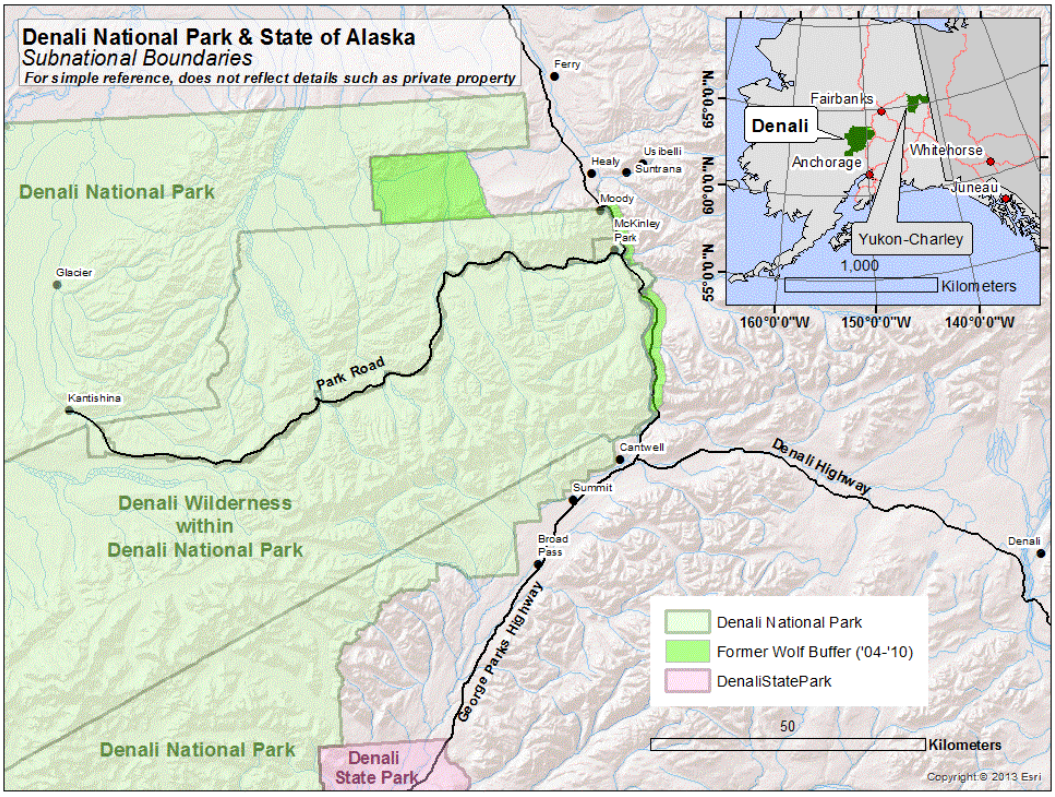

FIGURE 3.7: DENALI CASE STUDY MAP

This notch, like the notch in Yukon-Charley, was a result of the land selection process. Alaska selected the notch during the land selection process (i.e. before the expansion to Denali National Park and Preserve through ANILCA). Apparently, what is now the Stampede Trail was meant to be a road providing truck access to mines (Audio for Unit 20 Wolf Closure Proposals, February 26 - March 7, 2010). The intent for Denali to procure the notch through land trade has existed from early on (P. Hooge, personal communication, April 2013).

The notch is commonly known as the 'Wolf Townships' (N. Bale, personal communication, May 2013). The moniker refers to the Wolf Townships ecological function as winter habitat for Denali's Caribou. Wolves follow the caribou's migration into the area. The Wolf Townships favorable winter conditions for wildlife complement the surrounding Park's favorable non-

winter conditions (N. Bale, personal communication, May 2013). Many people, such as Denali Citizens Council President, Nancy Bale, see the Wolf Townships as 'ecologically part of the Park'.

The area acquired more recognition courtesy of John Krakauer's biography of Chris McCandless, Into the Wild. The biography ends with Chris McCandless dying of starvation in an abandoned bus on the Stampede Trail in 1992 (Krakauer, 1996). Present day tourists are rescued regularly, when trying to retrace McCandless' adventure. Krakauer's book is only one of many examples of popular culture contributing to Denali's wilderness mystique. Wilderness romanticism brings tourists.

The ecological oneness of Denali and the Wolf Townships causes socio-ecological concerns. The State manages wildlife in the Wolf Townships. Precluding a buffer (as discussed here) hunting and trapping of wolves is normally allowed in the Wolf Townships. The majority of tourists who visit Denali, access the Park on the Park Road (see Figure 3.7). Many of them come to Alaska, and Denali to experience wilderness. Wolf sightings can contribute to a wilderness experience (United States National Park Service, 2013). Wolf packs with territories intersecting the Park Road are somewhat frequently seen by visitors (United States National Park Service, 2013). The territories of these wolf packs sometimes also intersect the Wolf Townships, especially in winter. When wolves from these packs are hunted and trapped (i.e. removed) in the Wolf Townships, wolves are less likely to be seen by visitors to the Park.

The BOG instituted the Denali Wolf Buffer(s) to protect wolf viewing, a non-consumptive use of the wolf as a resource. Many tourists from out of state and Alaskans tourists enjoy viewing and photographing wolves. From an Alaska Constitutional standpoint, wildlife viewing is a benefit for Alaskans. This benefit is manifest in enjoyment, tourism economics, etc. These non-consumptive benefits must be considered by the BOG alongside the benefits received from hunting and trapping wolves.

3.2.3.2 Denali Wolf Buffer Agreement

Unlike the Yukon-Charley agreement, the Denali Wolf Buffer agreement did not begin with or even include NPS participation until 2010. At that time, the buffer was removed. At BOG meetings, public testimony and discussions about wolves provide never-ending material. No doubt many testimonies and discussions, not explored in what follows, were influential. The following synopsis of events represents a conscious decision on my part to focus solely on meetings leading to tangible changes to the buffer.

1992

The first version of the Denali Wolf Buffer appeared in 1992 (Alaska Board of Game, 1992). Media attention to an increasingly aggressive Alaskan wolf-control program enticed then Governor Hickel to call for a 'Wolf Summit' (Regelin, 2002). The Wolf Summit included various State and national interest groups (Regelin, 2002). Until the Wolf Summit resulted in a strategic plan, Hickel halted predator control (Regelin, 2002). In November, 1992 the ADFG proposed a closure of GMU 14C. The decision to close around 1500km2 was viewed by the BOG as 'housekeeping' (Alaska Board of Game, 1992). The action intended to placate "those who believe a hunting closure will increase opportunities to view wolves and those that are against wolf hunting" (Alaska Board of Game, 1992).

The action was rescinded in November of 1993. The BOG rescinded the closure because the proposal had been based on the Wolf Summit recommendations (Alaska Board of Game, 1993). Public backlash against predator control plans had spurred the BOG to rescind most elements of the strategic plan and all its implementation plans in June, 1993. The BOG revised the Strategic Plan and retitled it The Wolf Conservation and Management Policy for Alaska (Regelin, 2002).

2000

The Denali Wolf Buffer reappeared in 2000. Private citizens, photographers, and conservationists Dorothy and Leo Keeler proposed a new buffer to the BOG (Alaska Board of Game, 2000). The buffer was meant to protect wolves in a large area around Denali from hunting and trapping. In the proposal to the BOG, wolf protection was justified for ongoing

research, and viewing opportunities (Alaska Board of Game, 2000).The BOG adopted the proposal, amended to cover a smaller area than proposed (Alaska Board of Game, 2000). Around 28 km2 was closed in the wolf townships to protect one pack's range.

2001

The ADFG returned with another proposal in 2001 (Alaska Board of Game, 2001). The proposal added around 50km2, for a total buffer of around 187km2. This is the smaller of the two buffers, seen along the Parks Highway in Figure 3.7. In the proposal, the ADFG requested the buffer expansion to provide easier to identify landmarks than the previous demarcation. The proposal also cited better protection for a pack commonly viewed by tourists. The BOG granted the expansion of the buffer, but also imposed a sunset clause, ending provisions in March 31, 2002 (Alaska Board of Game, 2001).

2002

The Alaska Wildlife Alliance, an environmental NGO, submitted two proposals at the March BOG meeting in Fairbanks (Alaska Board of Game, 2002). Proposal 121 would have increased the buffer zone to 1300km2. Proposal 122 would have eliminated the sunset clause. The proposal contained arguments based on the protection of viewing opportunities. These proposals influenced the BOG to close an additional 183km2 to wolf hunting and trapping (Alaska Board of Game, 2002).

2004

At the spring 2004 BOG meeting, the tide began to turn. Three Fish and Game Advisory Committees, and the Alaska Trappers Association submitted proposals in 2004 (Alaska Board of Game, 2004). These four proposals sought elimination of the Buffer. The proposals argued elimination of the buffer would benefit ungulates and hunting opportunities. The BOG reduced the buffer to 316km2, the version seen in Figure 3.7. The BOG justified its decision by citing scientific studies. The results of the studies apparently showed the buffer had no measurable effects on the Denali wolf populations. The BOG continued to express willingness to "protect the viewing of wolves along a relatively small area the wolves routinely visit, while not trying to

protect their range" (Alaska Board of Game, 2004). The Board also set a six year moratorium on changes to the buffers to evaluate the effect on trappers and the tourism industry.

3.2.3.3 Cessation of Agreement

The previous moratorium on proposals to change the buffer ended at the spring 2010 BOG Interior Region meeting. Proposals were distinctly in favor of expanding the buffer, or in favor of its elimination (Alaska Board of Game, 2009).

The Denali Citizens Council, the Anchorage Fish and Game Advisory Committee, Defenders of Wildlife (submitted 2 proposals), and Superintendent of Denali, Philip Hooge all submitted proposals with the following themes:

- Wolf numbers are declining in Denali.
- Declining wolf numbers are bad for tourism.
- Declining wolf numbers are bad for Denali's ecosystem.
- Alaskans value live wolves.
- Non-Alaskans value live wolves.
- BOG has an obligation under MMoU to cooperate with the NPS.
- There are other places to trap wolves.
- The number of people who benefit from the buffers (i.e. seeing wolves) far outweighs the small number of inconvenienced trappers who must trap elsewhere.

The Middle Nenana Advisory Council, Ray Heuer of the Fairbanks Fish and Game Advisory Committee (who submitted 2 proposals to eliminate the buffer and another two for predator control in the area); Mike Tinker, Chair of the Fairbanks Fish and Game Advisory Committee; and hunting guide Brent Keith's proposals contained the following themes:

- The wolf closures have no effect on wolf viewability.
- The wolf buffers do not positively affect the local economy.
- With the wolf buffers gone there would be more moose to hunt.
- There are plenty of places where wolves are protected.

When Hooge, presented a proposal to the BOG in spring of 2010, it was the first time the NPS had officially advocated for a buffer. Before this, proposals had always been put forth by private citizens, interest groups or ADFG. When discussing the difficulty of creating collaborative solutions, Hooge suggested that the "value of [State-federal] conflict has more value than wolves or tourism," to the State (personal communication, April 2013). Hooge thought this value-in-conflict orientation to be especially true with the two most recent gubernatorial administrations (Sarah Palin and Sean Parnell) and discussed at length the changes in Federal-State relations through various administrations.

All proposals for increasing the buffer were rejected unanimously by the Board. I transcribed vocal arguments from BOG members from a sound recording of the meeting (Audio for Unit 20 Wolf Closure Proposals, February 26 - March 7, 2010). Selected excerpts from those transcriptions follow below. Reasons given by BOG members for rejecting buffer expansion were along political lines such as:

- A boundary is a boundary; until a compromise comes from the other direction (i.e. the Department of the Interior) – a trade for something down the road such as predator control in other areas where we need it.
- The Park Service is asking us to work together. We keep hearing what we need to do, but there is no budge from their side.
- The Park should discontinue collaring wolves on the eastern boundary of the Park. They're going to get trapped, if you're going to study wolves, why not do it in the interior of the park?

Legal jurisdictional lines such as:

- There has been no measurable increase in wolf sightings since the buffer has been in place. Trapping information from before the buffer is unknown, but was low. There is no harm in the area remaining closed, but this is an allocation not biological issue.

- We need to provide reasonable opportunities for subsistence users. Trapping is a subsistence activity, and trapping areas are traditional. If we close this area, and say 'do it elsewhere', we're forcing trappers to encroach on someone else's area.

Lines of relevance to tourism:

- The number of wolves is insignificant. They'll come back in a year or two. Tourists aren't going to not come to Alaska because they might not see these wolves.
- Photographers are at National Parks to photograph natural systems. No one wants a photograph of a wolf with a collar.

When proposals for removing the buffer were discussed, BOG comments were generally in favor of retaining the buffer. Comments compared the small sacrifice forced on a few trappers that had already adjusted, to the large and vocal constituency that had been more or less placated by the buffer present at that time. There was however some pushback against giving a proverbial inch to the 'Feds', and talk of how some people forgot that the "Feds swept in 25 years [prior] and locked up millions of acres of land to manage for federal values" (Audio for Unit 20 Wolf Closure Proposals, February 26 - March 7, 2010). In the end, the BOG voted 4 to 3 to eliminate the buffer, and placed a 6 year moratorium on related proposals. BOG rationale behind the moratorium was that the sheer amount of time spent on the subject when it comes up detracted from their ability to get other things done.

The Denali agreement ceased to exist, the same way it was created; the BOG regulated it out of existence. The BOG did not eliminate the buffer to prevent visitors to Denali from seeing wolves. The buffer was removed for a combination of scientific and political reasons. Regarding science, the BOG expressed doubt about the effectiveness of the buffer to achieve its stated objective. Regarding politics, as seen in the select comments above, the BOG expressed reticence to accommodate the NPS. This reticence on the BOG's part is a reflection of the tension between state and federal wildlife management authority. The State is legally responsible for the management of wildlife in the entire state. This responsibility includes wildlife on federal lands (NPS lands included). The NPS has overridden and shown inflexibility to

the State when contradictory objectives come into play (e.g. Case Study 1). I believe it likely that official NPS involvement nudged the sovereignty issue over the threshold.

3.2.3.4 INSTITUTIONAL ANALYSIS

The functionality of the agreement itself is best displayed with Figure 3.8. The figure relies on the Figure 3.1, but the agreement is added at its appropriate institutional level.

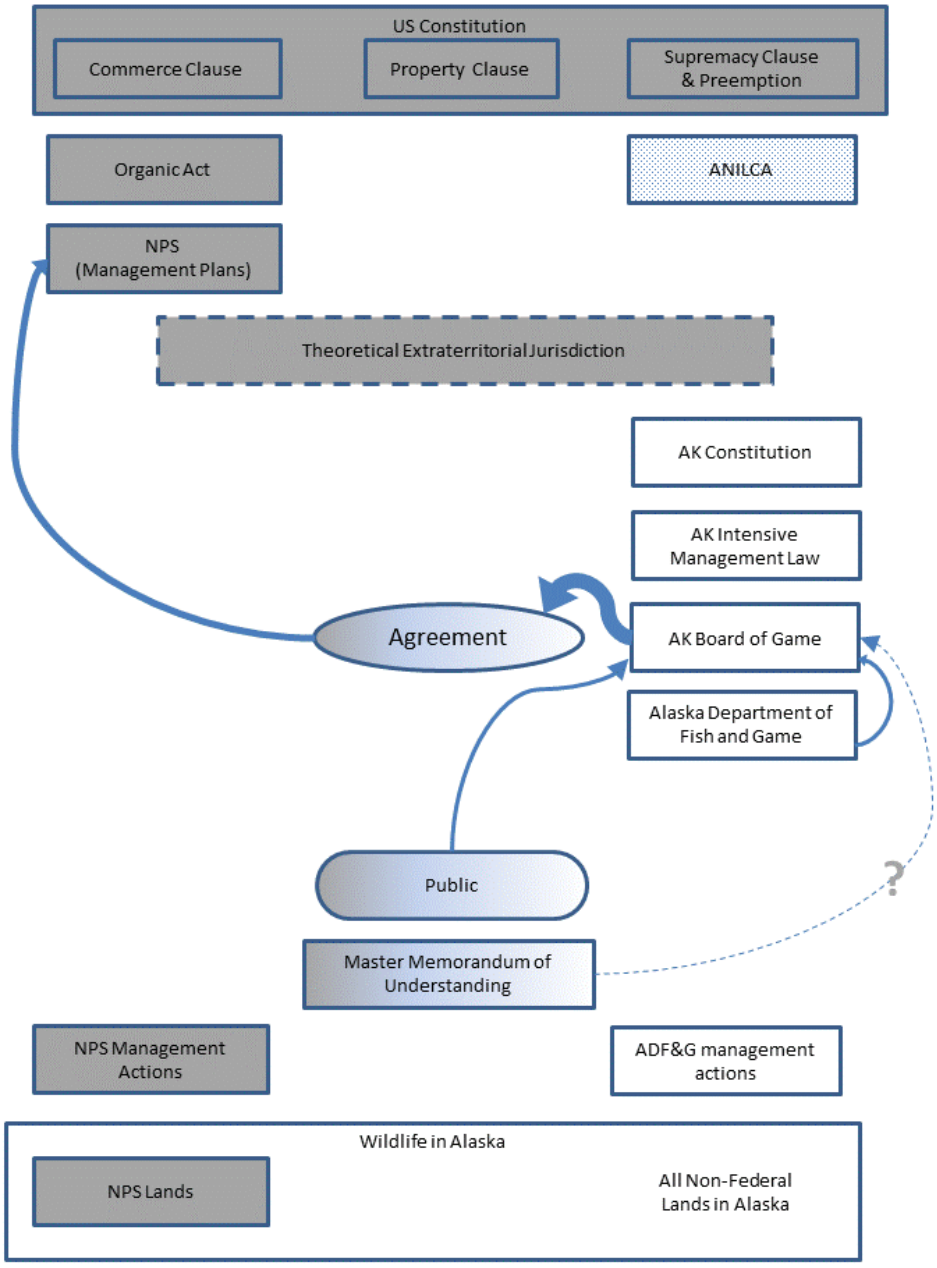

FIGURE 3.8: INSTITUTIONAL LEVELS IN DENALI AGREEMENT

Arrows represent the main influences and direction of influence between the agreement and the institutions. The BOG is the main actor. The public and the ADFG submit proposals to the BOG. The BOG rejects, accepts, or amends, those proposals at it sees fit. BOG amendments can drastically alter original proposals. The BOG, influenced by the public and the ADFG, essentially

handed the agreement to the NPS. The buffer was clearly desirable to the NPS; however, they had no power to accept or reject it. 'Agreement' might in this case be the wrong word. In 2010, when the NPS officially submitted a proposal (i.e. asked for an agreement), it was rejected.

As seen in the selected, transcribed excerpts from the audio recording (above), in this case the BOG was leery of setting a precedent expanding NPS management objectives onto State land (with other management objectives). The NPS's direct involvement introduced a new level of politics into the case. This level of politics seems to have contributed largely to the elimination of the buffer. Any minimal influence that the MMoU might have had to encourage cooperation was trumped by contemporary political conflict between the State and federal agencies.

A more inclusive representation of the dynamic relationships between entities involved can be seen in Figure 3.9.

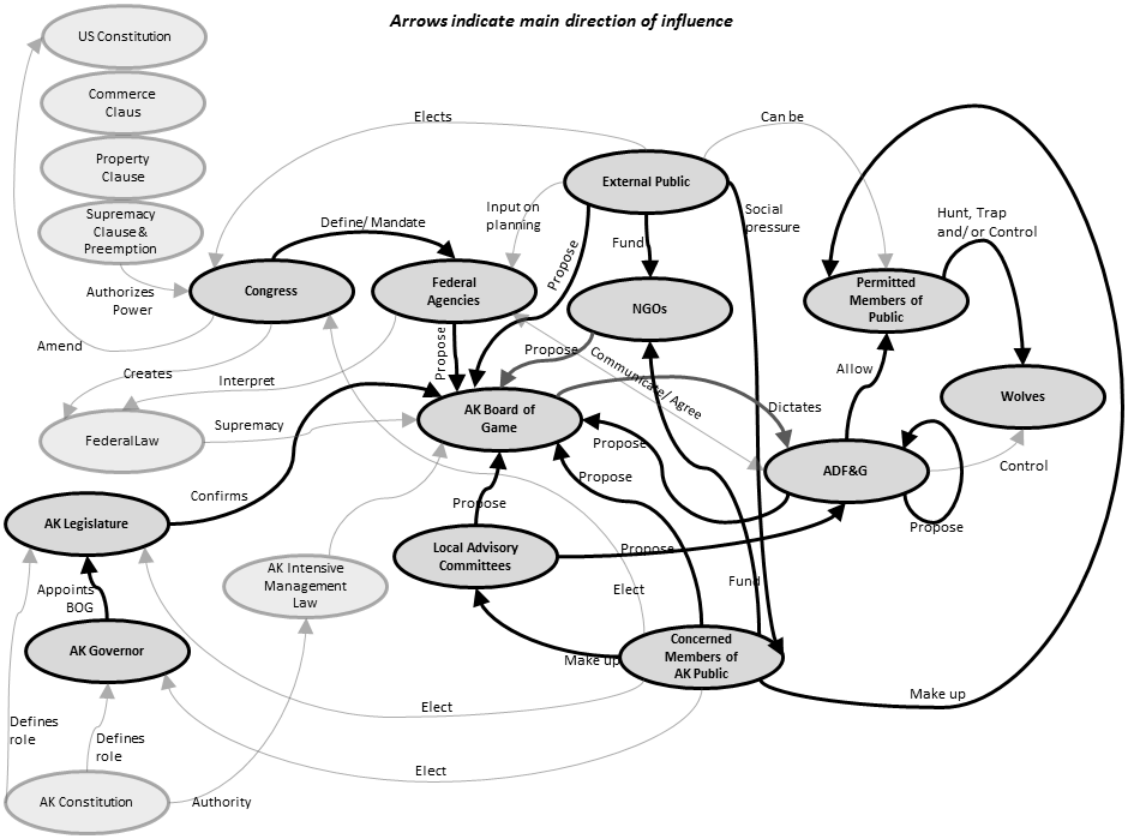

FIGURE 3.9: ENTITY RELATIONSHIPS IN DENALI AGREEMENT

The most active players in the Denali Wolf Buffer agreement are highlighted to stand out from the rest of the Entities Relationships diagram introduced at the beginning of the chapter. Here the most important actors were those that submitted proposals to the BOG: the public, NGOs, ADFG, Local Advisory Committees, and NPS. Similarly important was the BOG's desire to play a political role reflecting the expectations of the administration that had appointed them as members of the BOG. The BOG must balance it political obligations with its obligations to the State Constitution, i.e., to regulate wildlife management for the benefit of all Alaskans. Finally, with the involvement of the NPS in the 2010 proposal process, the management priorities of Denali, a reflection of Congress' guidance, were pursued. Once BOG lifted protection for wolves in the Wolf Townships, actions that could reduce wolf numbers was put in the hands of private trappers and hunters. When the moratorium is lifted, all actors will be permitted back to the table via the BOG proposal process.

3.2.3.5 DISCUSSION

This agreement involved protecting wolves from private hunters and trappers, as opposed to State wolf-control efforts. Nonetheless wolf-control played a central role in dialogue leading to the original creation of the buffer, and to its ultimate removal. Social pressure set the scene for the series for Denali Wolf Buffers. In the 1990s, as now, a significant number of Alaskans find pleasure in viewing wolves, and/ or do not like wolf-control. Negative media propelled Alaska's wolf-control into the national spotlight. A wolf-control induced tourism boycott sent ripples beyond the US; even into Europe (A. Gandolfi, personal communication, April 2010) (Bruckner, 1994). The financial impact of the boycott on Alaska's tourism industry is impossible to gauge, but tourism is important for Alaska's economy. A combination of social factors allowed a rare opportunity for an agreement to be made. The initial combination of factors quickly vanished, but their impact continues. Various interest groups participated in crafting a Strategic Wolf Management Plan. That plan led to the creation of the first buffer. The BOG rescinded the plan and buffer expeditiously, but the first buffer offered a template for future iterations.

In 2012 professor and activist, Rick Steiner submitted a proposal to remove the moratorium, arguing that it precluded the public from their right to participate in the regulatory process. The BOG unanimously rejected the proposal, reiterating the intent for the moratorium.

In response to BOG comments that evidence for impacts to wolves and tourism is lacking, a set of studies is being carried out by Denali staff. The studies aim to gauge: wolf movement in the area, the impacts of trapping on wolves, and public perceptions of wolf viewing (P. Hooge, personal communication, April 2013).

With certainty, once the moratorium is over the BOG will receive proposals to reinstate the buffer. Compelling science, social pressure, and political climate will likely guide BOG's decision to adopt or deny (or amend) those proposals.

3.2.3.6 IMPLICATIONS

The impact of buffer elimination on wolf populations in a larger sense (i.e. throughout Denali, and Alaska) is nominal. The area is important to certain wolf packs and associated wildlife. Wolf populations in packs seen (or not seen) by Park Road visitors, appear to be declining (United States National Park Service, 2013). Current studies may illuminate the impacts on visitors and potential wolf viewers. NPS interpretation (e.g. rangers, media) will increase the visitors' perception of what they are not seeing: (more) wolves, and (maybe) why. Tourists will incorporate these impressions into their thoughts on the issue.

In 2010, the BOG estimated a total of about 3-5 recreational trappers had regularly trapped in the Wolf Townships before the closure (Audio for Unit 20 Wolf Closure Proposals, February 26 - March 7, 2010). These trappers are likely enjoying increased flexibility of trapping options. Multiple proposals indicated opening the buffer would (through trapping) decrease wolf numbers and increase prey availability for hunters. While a prey increase in absence of the buffer is possible, the impact on prey availability to hunters would be small. Residents of the immediate area might benefit. Between the minimal boost ungulates may receive, and the existent availability of much larger tracts of huntable land in the area, the influence of buffer elimination on hunters appears quite limited.

I would argue that the stakeholders most affected by the cessation of the agreement fail to be prominently addressed in the proposals and discussion. The BOG posited that for those in favor of wolf protection the buffer will never be big enough. Evidence for this position exists in proposals for ever-expanding buffers. Some people just want to protect wolves. The symbolism of the buffer removal may be more powerful than the quantification of wolves taken, or visitor trips without wolf sightings. Symbolism also affects those who simply disagree with limitations on wolf take. Further effects may be felt by an anti-federal constituency of Alaskans.

3.3 WESTERN ALPS: ITALY & SWITZERLAND

Because of the distinct multi-level governance structure of the Western Alps case study, it was necessary to take a slightly different approach in analysis to what was used in the Alaska

case studies. Wherever possible, I maintained a sort of symmetry to facilitate an amenable comparison.

3.3.1 Institutional Context

Figure 3.10 shows the main institutional levels affecting wolves in the Western Alps.

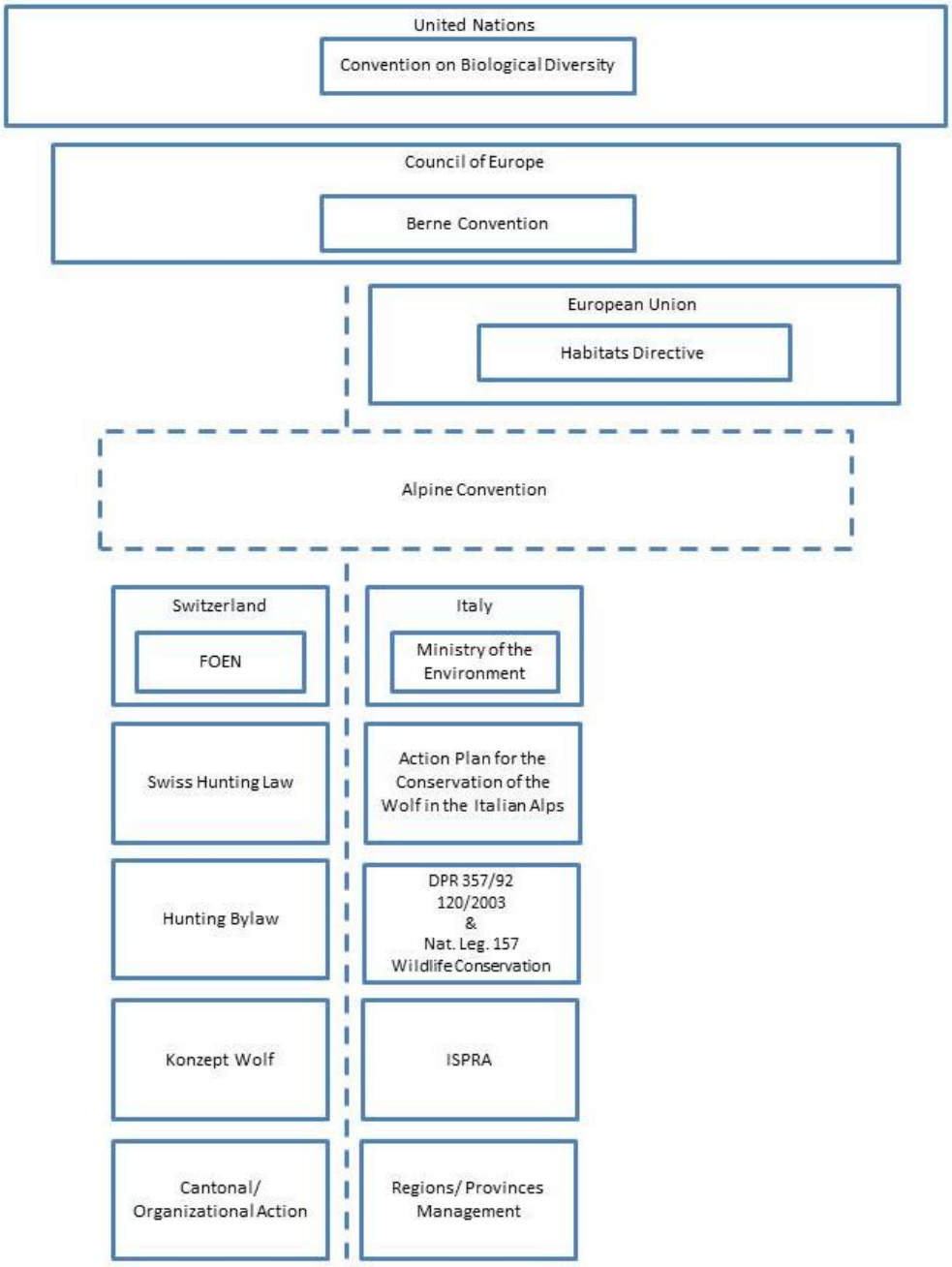

FIGURE 3.10: INSTITUTIONAL LEVELS AFFECTING WOLVES IN WESTERN ALPS: ITALY & SWITZERLAND[5]

These are shown from the largest, or most all-encompassing at the top (i.e. UN), to the most local and directly relevant to wolves at the bottom (i.e. Cantons & Provinces). The institutional

[5] Legal authority not necessarily implied.

levels do not necessarily imply top-down power; to the contrary, most 'power' in relevant wolf governance flows from the bottom of the diagram up. Nonetheless some institutions at 'lower' (but not necessarily less powerful) levels refer to and comply with 'higher' (but not necessarily more powerful) institutions.

3.3.1.1 United Nations

The UN is at the top of the Institutional Levels diagram. The UN includes Italy, Switzerland and 191 other member states. While the US is one of those states, the US is not a party to the 1992 Convention on Biological Diversity (CBD) mentioned here. In a sense the UN belongs at the top of institution levels illustrations for the Alaska case studies. However, no current UN treaties affect wolf policy in Alaska; hence the UN is not mentioned in the Alaska case studies. Both the burgeoning Alpine Convention (discussed below), and the Trinational Agreement (the subject of this case study) both reference the CBD. Aspects of each stratigrafically higher institution frequently make appearances at lower institutional levels.

3.3.1.2 Council of Europe

Italy and Switzerland are 2 of 47 member states of the Council of Europe (CoE). The CoE is an international organization promoting cooperation between all the states of Europe in a number of topical fields, including wildlife and natural habitats (i.e. Bern Convention). The CoE is a separate entity from the EU, though cooperation between the entities has recently been reinforced. Two important distinctions between the CoE and the EU are 1) that the CoE cannot make enforceable laws, and 2) Non-Governmental Organizations (NGOs) can participate in and/ or observe many functions of the CoE.

3.3.1.2.1 Bern Convention

The Bern Convention was signed in 1979 and came into force in 1982. As of 2010 the entire EU, CoE (except San Marino and Russia), and four African Nations are among the Bern Convention's 50 contracting parties. The Bern Convention represents a large swath of conservation-treaty-bound land. The Bern Convention is likely the most influential law in Europe at the moment relating to wolf management (as well as other native European species and

habitats). Besides protecting species and habitats, another stated goal of the Bern Convention is to foster international cooperation in the field of natural resource conservation.

Species in the Bern Convention are listed under three Appendices. Appendix I is for strictly protected plants. Appendix II is for strictly protected animals (including the wolf). And Appendix III is for protected (i.e. not 'strictly' so) animals. Being listed as Appendix II or III is not a measure of how threatened or endangered a species is, rather, it is a result of consensus and negotiations.

All parties to the Bern Convention are committed to maintaining species populations at "levels that correspond to ecological, cultural and social requirements" (Bowman, Davies, & Ridgewell, 2010), despite the fact that these levels are intentionally undefined. Bowman, et al. also adds that meeting these goals overrides economic interests.

Relevant Prohibitions for Appendix II species are as follows:

All forms of deliberate capture and keeping and deliberate killing:

- The deliberate damage to or destruction of breeding or resting sites.
- The deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of the Bern Convention.
- The possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognizable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article.

Protection afforded Appendix III species is decidedly more lax:

Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species specified in Appendix III.

- Any exploitation of wild fauna specified in Appendix III shall be regulated in order to keep the populations out of danger, taking into account the requirements of Article 2.
- Measures to be taken shall include:

- Closed seasons and/ or other procedures regulating the exploitation.
- The temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels.
- The regulation as appropriate of sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

Under certain circumstances, parties may exclude themselves from certain obligations given that it does not threaten the survival of a species, or population. Switzerland, for example has authorized the shooting of a number of disperser wolves entering from Italy (see discussion in 1.2.2.1.2). At the request of livestock owners Switzerland has requested the transfer of wolves from Appendix II to Appendix III, these requests have been rejected by the Bern Convention Standing Committee because: 1) although the continental wolf population has increased in size through natural recolonization and legal protection, they maintain only a precarious hold in most regions, and 2) because other provisions to assist/ deal with livestock owners exist within the convention.

At the time of signing, parties are allowed to exempt themselves for particular species and methods of killing and capture otherwise prohibited (Bowman, Davies, & Ridgewell, 2010). About half of the parties made one reservation or another, usually to the same few species commonly thought of as pests, or a danger to humans. The wolf occupies a prominent position on this list (Bowman, Davies, & Ridgewell, 2010). Other exceptions are also authorized in certain situations, under careful examination, after the exhaustion of other options, such as the protection of flora and fauna, to prevent serious damage to livestock, research, and in the interest of public health (Bowman, Davies, & Ridgewell, 2010).

Articles 4-9 deal with habitat conservation. Transboundary issues are addressed in Article 4(3), which brings special attention to migration routes among Appendices II and III species. 4(4), requires parties to coordinate their habitats situated in ‘frontier areas’. The Bern Convention also contains guidelines for the introduction and reintroduction of species as well as the eradication of non-native species.

The major mechanism for enforcement of the Bern Convention is a regularly meeting standing committee. The Standing Committee reviews parties' reports of general exceptions, national implementation, and other obligations. The Standing Committee also identifies problem locations. This process creates a kind of official peer pressure to comply with obligations, or risk criticism (Bowman, Davies, & Ridgewell, 2010). Additionally, parties are obliged to pursue national policies, promote education and dissemination, and consider conservation in their development policies, though no details are provided (Bowman, Davies, & Ridgewell, 2010).

3.3.1.3 European Union

The EU is an economic and political union of 28 member states, including Italy, but not Switzerland. It operates through a system of supranational independent institutions and intergovernmental decisions negotiated by member states.

EU member states retain all powers not explicitly handed to the EU. There are international power-giving treaties which enable the EU to enact legislation binding for member states. The supremacy principle requires national courts to enforce treaties that EU member states have ratified, even superseding conflicting national law and some constitutional provisions.

3.3.1.3.1 Habitats Initiative

The Habitats Directive (formerly Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) is an EU directive adopted in 1992 mirroring the Bern Convention. Unlike the Bern Convention, the Habitats Directive has enforcement measures such as fines that can be exacted on member states for non-compliance.

3.3.1.4 Alpine Convention

The Alpine Convention is a framework agreement encompassing Italy, Switzerland France, Austria, Germany, Liechtenstein, Monaco, and Slovenia, as well as the EU. The Large Carnivores, Wild Ungulates and Society (WISO) platform deals with wolves, and ultimately supplants the

Trinational Agreement that is explored in depth here. The Alpine Convention in context is discussed in more detail in 3.3.5.

3.3.1.5 National Levels

Both Switzerland and Italy are sovereign nations and ultimately have the power to define their own wolf-management policies and practices. As mentioned above, these policies and practices are often influenced by transnational treaties and agreements. Nations are under extreme social pressure from other countries in the region to craft policies 'in the spirit' of these multi-lateral treaties and agreements (Bowman, Davies, & Ridgewell, 2010).

Switzerland, for example, has repeatedly been rebuked by other Bern Convention parties, for attempting to downgrade the wolf from Appendix II to Appendix III (i.e. offering less protection for the wolf). Whether this pressure would translate into other political arenas (e.g. trade policy) is speculative, but Switzerland has favored identifying 'Spielraum' (transl. Wiggle room) in treaties over outright disregard. Switzerland has also gone so far as to threaten to withdraw from the Bern Convention in order to re-sign with built-in reservations for wolf protection, but ultimately did not do so.

It can be argued that Switzerland with one of the strongest economies in Europe has a certain responsibility to minimize their complaints about hardships caused by wolves. This is also true, to a lesser extent, for Italy. This economic equity concept is complicated by such factors as tolerance for poaching and other informal institutions. It will be interesting to watch how wolf management policies reflect major economic realignments throughout the region.

Because of this interplay between multi-level, multi-national entities I have chosen to discuss national-level policy in the context of functional relationships between entities. Summaries of national level management strategies are located below within the context of the Trinational Agreement.

3.3.1.6 ENTITY RELATIONSHIPS IN ITALIAN - SWISS WOLF POLICY

As seen in Figure 3.11, the Bern Convention applies to the member states of the CoE (i.e. both Switzerland and Italy).

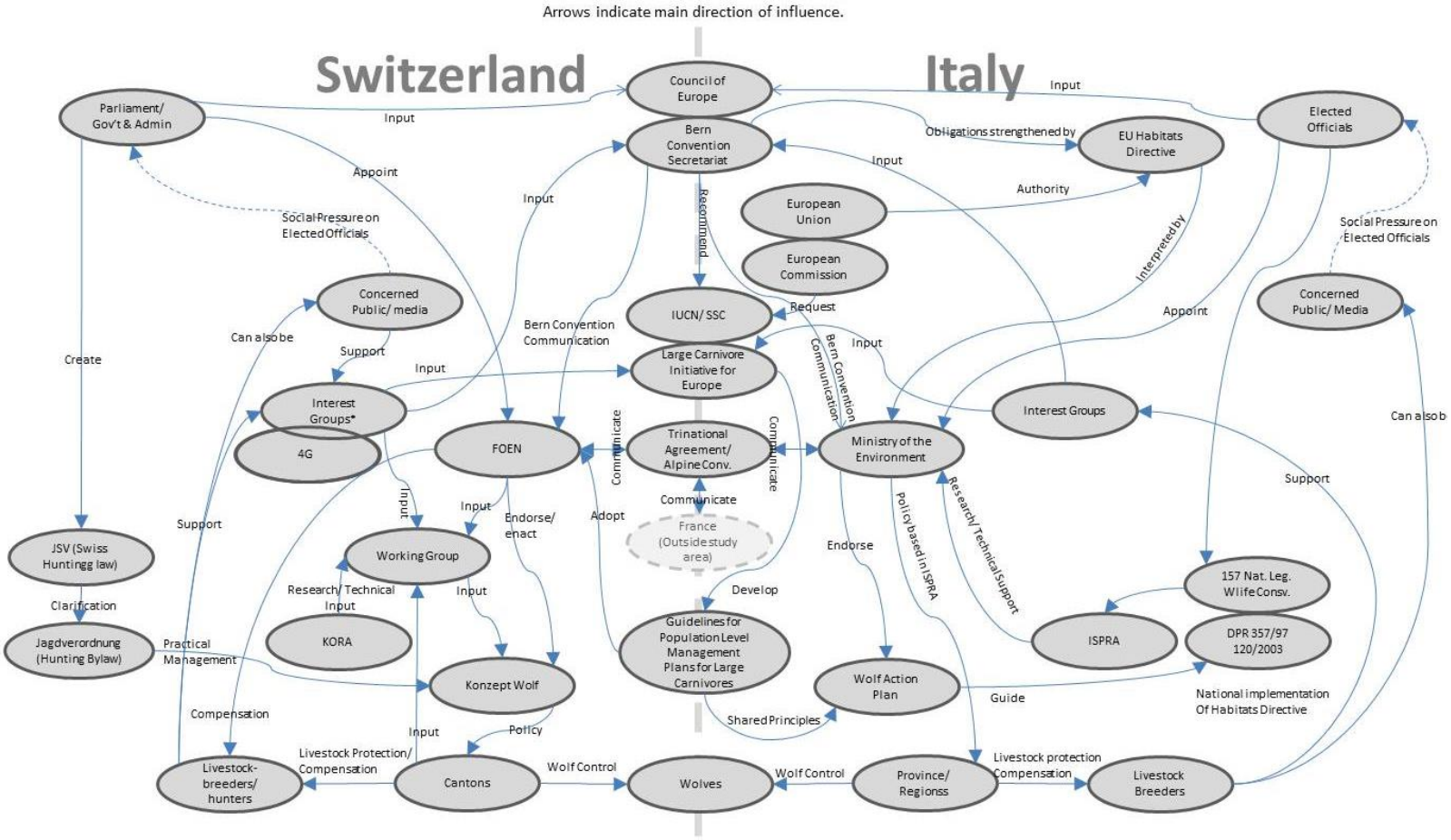

FIGURE 3.11: ENTITY RELATIONSHIPS IN ITALIAN - SWISS WOLF POLICY

Both countries have input to the CoE on a federal level. CoE treaties such as the Bern Convention are binding, but in reality are only enforceable though a peer-pressure mechanism. Peer pressure to respect the spirit of the agreements exhibits some level of success. The Bern Convention Secretariat is responsible for communication to member states on policy compliance. In the case of Italy, a member of the EU, Bern Convention obligations were mirrored and strengthened when the EU adopted the Habitats Directive which is legally binding to EU states under penalty of fine.

The European Commission (EC), under the EU requested that the Large Carnivore Initiative for Europe (LCIE), under the International Union for the Conservation of Nature (IUCN), Special Species Commission (SSC) develop Guidelines for Population Level Management Plans for Large Carnivores (Guidelines). Interest groups are also able to contribute to the LCIE. The LCIE worked with the Italian Ministry of the Environment, interpreting the Habitats Directive and ultimately endorsing the Action Plan for the Conservation of the Wolf in the Italian Alps (Italian Action Plan).

The Italian Action Plan, though not legally binding, serves rather as guidelines for the application of the Italian law DPR 357/97. DPR 357/97 implements the Habitats Directive in national law, and National Legislation 157 on Wildlife Conservation. These laws were put into place by federal, elected officials, who also appoint the Ministry of the Environment. The Italian Institute for Environmental Protection and Research (ISPRA) is responsible for providing research and technical support, on how to implement wolf policy, to the Ministry of the Environment. The Ministry of the Environment technically could choose not to accept the recommendations; in reality however, the Ministry authorizes all actions based on ISPRA recommendations. Policy is then handed down to the Provinces and Regions. Provinces and Regions would theoretically be responsible for wolf culling if it were to be approved (it has not as of yet).

Provinces and Regions pay compensation for livestock lost to wolves as well as subsidizing protection measures. Livestock breeders can influence policy only indirectly by supporting

interest groups which represent them and can provide input to the LCIE and the CoE. Livestock breeders are also part of the larger body of concerned public that through strength in numbers and/ or the media may or may not sway elected officials. Elected officials have their hands tied relatively tightly by layers of bureaucracy, and have very little wiggle room to concede.

In Switzerland as well, the Bern Convention Secretariat communicates back with the appointed Federal Office for Environment (FOEN) about compliance with Bern Convention obligations. Switzerland has also adopted the Guidelines. The Guidelines enter the policy-making mix through FOEN to a working group including cantonal entities, scientists from Carnivore Ecology and Wildlife Management (KORA), and various interest groups. The Federal Hunting Law and clarifying bylaw are further taken into account, and FOEN enacts versions of the legally binding Concept Wolf. Concept Wolf lays out policies for cantons regarding wolf-control, livestock protection, and compensation for loss.

There is also an unofficial group, the '4G'. '4G' is a double entendre referring at once to the 'vier Grosse' – or big 4 interest groups including: a hunters organization, a shepherds organization, WWF, and ProNatura (U. Breitenmoser, personal communication, May 2013); and to the controversial article 4G in the bylaw that deals with 'population regulation'. These four groups try to hash out their differences behind closed doors, and are a good indicator of the bent of the most controversial groups.

Swiss interest groups, like Italian interest groups represent specific interests as opposed to the public as a whole. As in Italy, Swiss interest groups have access to the CoE/ Bern Convention, and the LCIE. Unlike Italian interest groups, Swiss interest groups have a say in their national policy process. This makes Swiss interest groups arguably more influential than Italian ones. The Swiss federal government, less encumbered in the absence of EU regulation is more susceptible to social pressure from the concerned public and media outlets.

As in the entity-relationship, conceptual diagrams above, Figure 3.11 shows each of the main actors and their main direction of influence, in the context of wolf governance. Some information is intentionally redundant with Figure 3.10.

3.3.2 Agreement 3 – Trinational Collaborative Agreement

The Trinational Collaborative Agreement between Italy, Switzerland, and France was the result of a recommendation by the Bern Convention Standing Committee. In 2004 Switzerland attempted to have the wolf downgraded from Appendix II to Appendix III protection within the Convention, in order to allow more flexibility in management (e.g. removal). At the same time the EU (including Italy and France), also a Bern Convention party, had accepted a recommendation to conduct a scientific study on the size and distribution of the European wolf population and threats to it. It had become clear that 1) those three nations played a particularly important role in the conservation of the wolf population originating in Italy, and 2) each nation had interpreted their Bern Convention obligations vis-à-vis wolves into management policies somewhat incompatible with the others. Each country's wolf management policies are and have been in flux since the wolf 'issue' became an important one. In brief, recent wolf-management policies, reflecting national predispositions and interpretations of identical treaty obligations of Italy, Switzerland and France are summarized below.

3.3.2.1 Italy

In Italy, wolves are strictly protected. There have been no exceptions allowing removal, though exceptions are theoretically possible. Despite protection under the law, the informal institution of poaching is responsible for the killing of an estimated 15, 20, or even 30% of the wolf population annually (P. Genovesi, personal communication, May, 2013). Luigi Boitani, a prominent wolf biologist and contributor to documents such as the Italian Action Plan, is quoted as saying "There is a type of illegal compromise." In Italy wolf-poachers are rarely if ever pursued or prosecuted. As mentioned above, the Italian Action Plan itself is not a management plan and is not legally binding, but provides guidelines and technical support for policy makers. Policy makers have expressed unhappiness with the level of poaching, but feel unable to stop it (E. Dupré, personal communication, April 2013). According to Eugenio Dupré, from the Italian

Ministry for the Environment, the thinking is that allowing any legal removal will not prevent poaching, but rather add to the overall number of wolves removed (personal communications, April 2013).

This 'illegal compromise' faces various levels of success across various provinces for two primary reasons. First, the regions where wolves were never extirpated are acclimated to predators, and have continued to practice shepherding methods which minimize predation on herds (Genovesi, 2002). Between protective measures, and the occasional shoot-shovel-shut-up treatment of problem wolves, there is minimal conflict over wolves (E. Dupré, personal communication, May 2013). In regions, on the other hand, where wolves have only recently returned, laissez faire shepherding is often the status quo. Shepherds here are for various practical and cultural reasons slow to adopt protection methods, and poach high numbers of wolves (Genovesi, 2002).

Secondly, the strategy for building local support is to reimburse shepherds for each animal lost to wolves. To build goodwill and minimize disagreement between livestock herders and officials, reimbursement requirements preclude examining the kill too closely to determine whether it was in fact a wolf kill (E. Dupré, personal communication, May 2013). Avoiding extreme scrutiny is intended to relieve some of the burden felt by livestock herders due to the sanctioned wolf recolonization (E. Dupré, personal communication, May 2013). Evidence shows that the number of sheep killed by domestic dogs is greater, than by wolves. Annual reimbursements total upwards of €1.5 million per year (Boitani, Ciucci, & Raganella-Pelliccioni, 2010). Provinces are responsible for reimbursements on their own, and processes and pay-outs vary significantly from region to region leading to incoherence even within Italy.

3.3.2.2 SWITZERLAND

Switzerland's national management plan is Concept Wolf. As of fall 2013, Concept Wolf is currently being revised. The stated priority for the plan is to minimize problems between humans and their activities (e.g. agriculture, hunting, tourism), and the presence of wolves. Like

Italy, Switzerland reimburses farmers for their losses. There are however, some notable differences.

First, costs are split between the Swiss Federal Government and cantonal governments. Since farmers are presumably anxious for reimbursement, this shared federal - regional arrangement ensures support for the cantons, and ensures that the cantons act appropriately (i.e. since they too are paying). Farmers must retain the livestock carcass to prove wolf predation was responsible. If an examination is inconclusive (e.g. a dog might have killed the sheep), partial reimbursement can be distributed. Further there is a series of phases where protection measures are subsidized once wolves have been identified in a region. These subsidies are gradually reduced over time. This reduction is based on the initial investment having already been made (e.g. to purchase and/ or train a guard dog), and as herd protection becomes standard operation procedure. A farmer must have taken mandatory protective measures to be eligible for compensation.

The first year that wolves are identified as being in a region, if 25 livestock are killed in a month, or 35 in four months, and mandatory protective measures have been taken, a permit is issued to remove the problem wolf. In the second year, only 15 livestock have to be lost to predation for a permit to be issued, assuming all mandatory protective measures have been taken. For a frame of reference, between 1995 and 2008, 32 wolves had been confirmed in the country, of those, 8 were removed legally. Of course identifying the 'problem' wolf to remove is problematic. It appears that DNA confirmation only takes place after the suspected wolf is shot. Switzerland has very little poaching of wolves (C. Nienhuis, personal communication, April 2013).

3.3.2.3 FRANCE[6]

As mentioned previously, both Italy and France share the enforceable EU Habitats Directive as a guiding rule. Comparing wolf-management relationship between Switzerland and Italy, and

[6] See discussion in Chapter 1.

Italy and France reveals some significant differences. Between Italy and France, there is more frequent communication, stricter collaboration and control, and generally fewer practical differences between the two countries when it comes to wolf management. As mentioned in Chapter 1, because of this preexisting coherence and for matters of simplicity, I have chosen to focus on the Italian - Swiss border; however, the formal contrast between Italy and France is important for context.

The wolf population is well into the hundreds in France (Sayare, 2013). In 2009 alone, an estimated 3,279 livestock (primarily sheep) were killed by wolves, and €3 million are spent annually on herd protection (Baumgarnter, Gloor, & Weber, 2011). The National Wolf Action Plan in the French Context of Substantial and Traditional Livestock Farming puts as strong an emphasis on conditions for small livestock farming, as on wolf conservation. The plan states that the costs for herd protection and livestock compensation are impossibly high. Therefor the plan seeks to bound the areas where wolves recolonize, and slow wolves' expansion. This is done by liberally issuing wolf removal permits, in order to buy time to build acceptance among locals and prepare protection measures. Shepherds with hunting licenses may shoot wolves molesting their herds. Various numbers of wolf removal permits have been issued per year. Although exact quantities are difficult to come by, approximately 100 wolves were poached between 2000 and 2008 (Baumgarnter, Gloor, & Weber, 2011).

3.3.3 Agreement Continued

The most important part of the Trinational Agreement was the clear recognition that Italy, Switzerland, and France were dealing with a single wolf population (E. Dupré, personal communication, April 2013). The existence of a single Italian-French-Swiss wolf population had not been a matter of debate among experts studying the topic (U. Breitenmoser, personal communication, June 2013). The evidence was also "too clear" to be questioned by the agencies in charge (U. Breitenmoser, personal communication, June 2013). Negotiations between Italian, French, and Swiss environmental ministers' delegates, completely outside of the Bern Convention institutions, resulted in the official recognition of a single Italian-French-Swiss wolf population (P. Genovesi, personal communication, June 2013).

That no country should and/ or could do meaningful management without consultation with neighboring countries has also been considered common understanding among experts and agencies in charge (U. Breitenmoser, personal communication, June 2013). Despite independent management entities, there was a need to find agreements. The Trinational Agreement references the Bern Convention, the Habitats Initiative, and the CBD. The agreement focuses on the shared responsibility and ecological value in supporting wolf conservation, the importance of shared research, and the need to maintain alpine livestock farming. The agreement also recognized that each national management or action plan called for international contact and coordination. More specifically, I was told that the exchange of management experience was paramount, and that there were several working groups focused on: damage prevention, damage response, human consensus (i.e. popular opinion and public awareness).

In the Trinational Agreement, which was not legally binding, environmental ministers from Italy, Switzerland, and France committed to:

- meeting regularly to:
    - Strengthen the coordination of wolf policies and information exchange.
    - Create a technical working group for wolf research and monitoring to support the natural recolonization.
    - Designate a contact for each country responsible for wolf communication.
- Make technical and administrative information available.
- Exchange personnel to assist with research.
- Work together to create conservation/ preservation programs for border areas.
- Inform bordering countries about any plans to conduct wolf-control, and to inform bordering countries about reasons for the wolf-control.

On the Institutional Levels Affecting Wolves in Italy and Switzerland diagram (Figure 3.12), the Trinational Agreement fits between the Alpine Convention and the national levels.

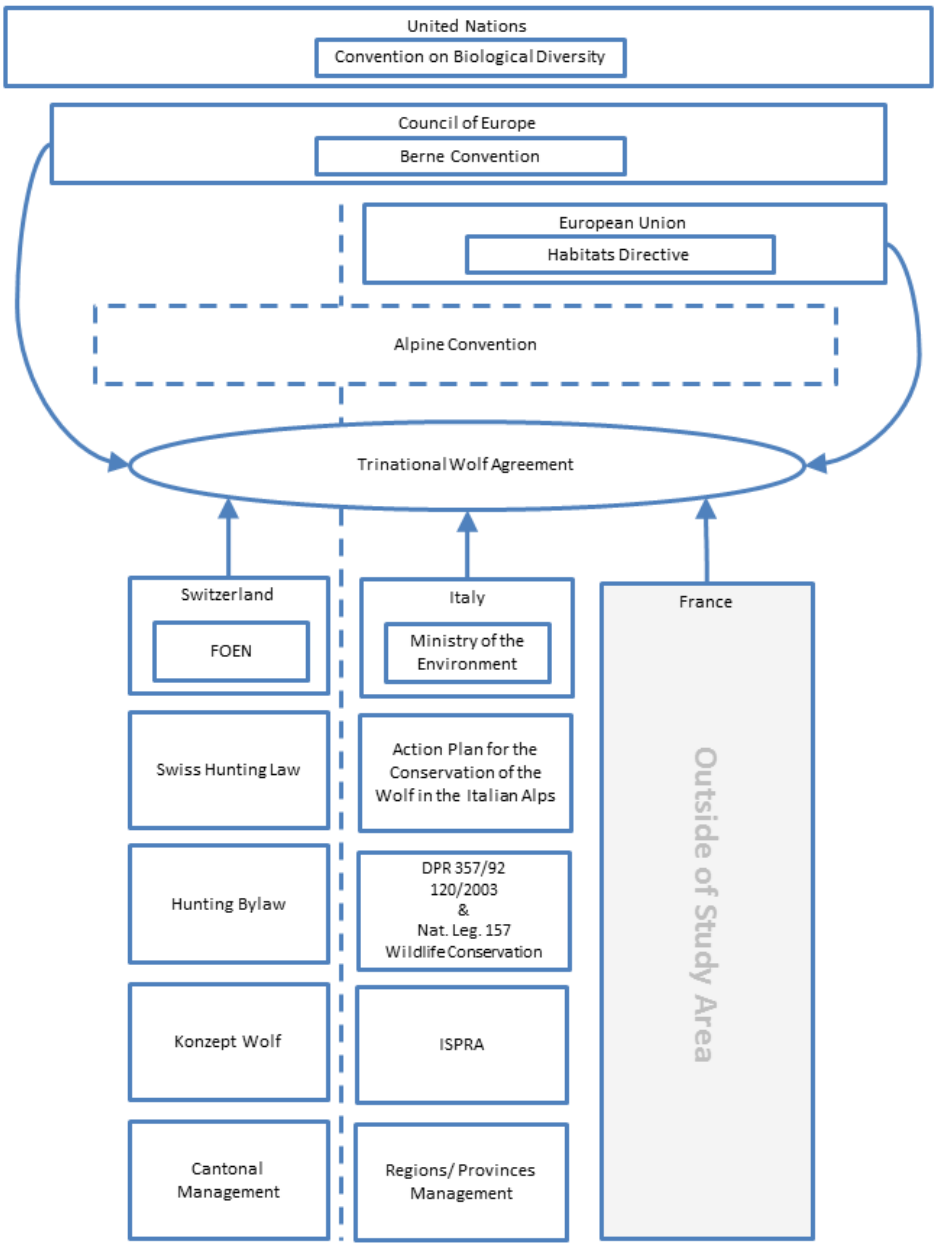

FIGURE 3.12: INSTITUTIONAL LEVELS AFFECTING WOLVES IN WESTERN ALPS AGREEMENT

Arrows from the CoE Bern Convention, the EU Habitats Directive, and national levels have all been displayed as the same size, though the reasons are different. As mentioned above, the CoE's Bern Convention Standing Committee originally recommended the three countries craft an agreement. Though the EU Habitats Directive did not, per se, call for the creation of the

agreement, the agreement would assist EU countries in meeting their Habitats Directive responsibilities. The Habitats Directive was cited numerous times in the Trinational Agreement. As implied above, the Trinational Agreement was in part conceived as a way to correlate the Habitats Directive and Swiss wolf management policies. Finally, each country had a say in the contents of the agreement, and the environment ministers from each country signed it.

3.3.4 Cessation of Agreement Functionality

There was never an official decision to stop meetings sanctioned by the agreement; however, they ceased around 2010. This cessation corresponded roughly with the inception of the WISO platform, set up in 2009 under the Alpine Convention. Discussed in more detail below, this platform makes the Trinational Agreement redundant. Some participants in transboundary wolf conversations indicate with candor that the WISO platform simply replaced the Trinational Agreement making it irrelevant (C. Nienhuis, personal communication, April 2013); others found the unofficial cessation of the meetings "unfortunate" (E. Dupré, personal communication, April 2013). The official line for not meeting was that participants "forgot", but there were some conflicting undercurrents between participants such as the "difficulties of Switzerland to accept the main rule [which was] formally agreed upon…" (E. Dupré, personal communication, April 2013). The WISO platform offers more options to affect management guidelines, and development options than the Trinational Agreement does.

When pressed about the cessation of the Trinational Agreement, all interviewees shared similar opinions. Although there were some "different ways to see the situation," between parties, the real conflict was between livestock farmers and environmental NGOs (E. Dupré, personal communication, April 2013). These conflicts, which roughly translate into the rural - urban divide, were the same on both sides of the border. Though interviewees maintained that the dissonance was not between countries, rather between stakeholder groups, certain contentious issues were evident.

- In the context of an increasing wolf population in Italy, France would have preferred Italy reduce those border populations in Italy that have a large impact in France.

- No official statement appeared pointing the finger at Switzerland. Key wolf biologists and vocal advocates, however, were concerned. As shown in Figure 3.13, the convex border of the Swiss canton Ticino, extends south far into Italian urban sprawl.

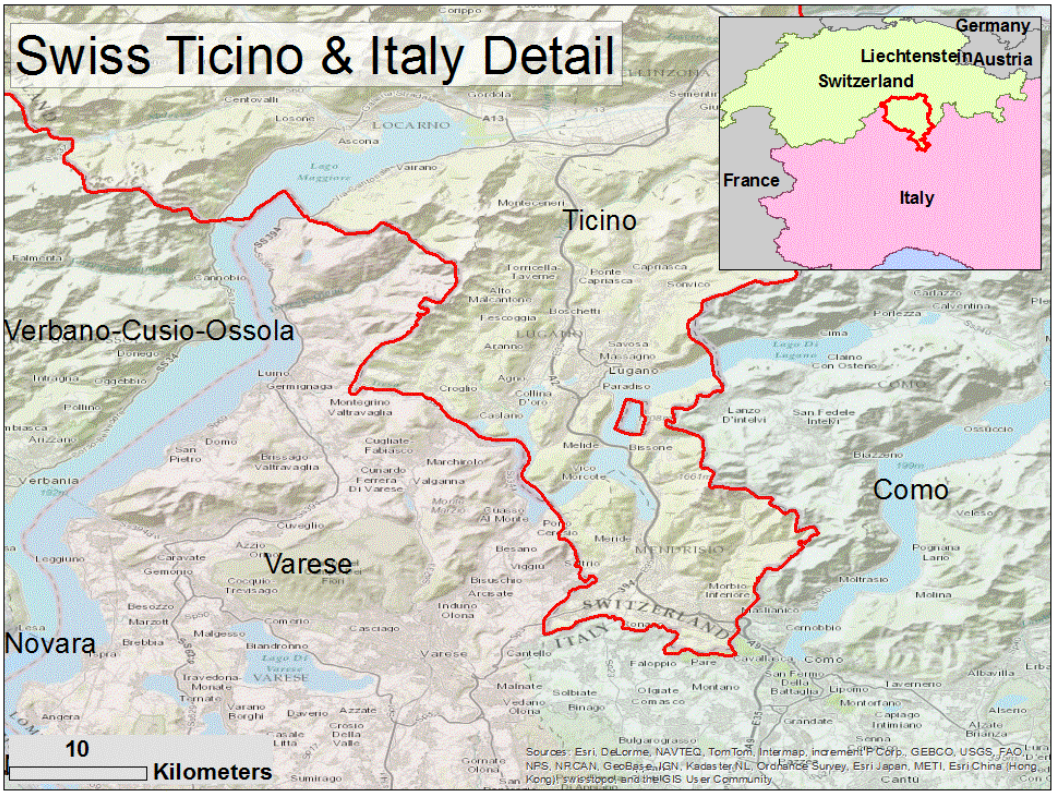

FIGURE 3.13: SWISS TICINO & ITALY DETAIL MAP

The capability of even adaptable wolves to traverse such dense human development seemed unlikely to the participants. A combination of the already limited number of wolves in Switzerland, and liberal permitting for wolf removal could act as a barrier (personal communication, A. Gandolfi, April 2011). The barrier could prevent the wolf population of Italian stock from connecting with Eastern European wolves (especially Slovenian wolves). Interbreeding between these two populations would be positive for genetic biodiversity of the population(s). This concern was partially alleviated in 2012, when the first Slovenian female wolf reached and spent significant time with a male wolf from France. It appears this meeting occurred without the wolf entering Switzerland (E. Dupré, personal communication, April 2013). Despite the wolves'

success, this situation highlights the impacts of contradictory management transcending borders. It also highlights a potential source of disagreement between Italian and Swiss officials.

The difference between policies on legal removal and tolerance of poaching represents a distinct difference between Italian and Swiss wolf management. From the Italian point of view, Switzerland's permitting of removal can be seen as too liberal and not in the spirit of the treaties and agreements. On the other hand, from Switzerland's point of view, controlled legal wolf removal and very little poaching is preferable to tolerating rampant poaching under the guise of full legal protection.

3.3.5 Alpine Convention & Discussion

The Alpine Convention came into force in 1995, and spans not only the trinational region, but the entire alpine region including Italy, Switzerland, France, Austria, Germany, Liechtenstein, Monaco, and Slovenia, and includes the EU. The WISO platform, like its predecessor in function (the Trinational Agreement) is not binding by law. The WISO platform does have buy-in and direct access to environmental ministers from the entire region with ministerial meetings every two years. WISO has had a slow start, but takes a much more holistic approach to wolf and wildlife interactions with human society than the Trinational Agreement. Projects under the Alpine Convention are "aimed at promoting sustainable development in the Alpine area and at protecting the interests of the people living within it. It embraces the environmental, social, economic and cultural dimensions" (Alpine Convention, n/d).

WISO is also one of the partners in the nascent Recovery of Wolf and Lynx in the Alps (RowAlps) project. The main objectives of RowAlps are: to model potential distribution of wolf and lynx, to detect public tolerance mechanisms, and to develop management options. So, while the Trinational Agreement has ceased to be effective, it has been succeeded by something that is likely to not only take its place, but which is also likely to be more effective than its predecessor. It has been suggested that the most important function of the Trinational Agreement was to identify Italy, Switzerland, and France's wolves as a single population. These

new approaches under development recognize an even larger, pan-Alp population. Beyond that, they recognize indivisibility between wolves and socio-ecological systems.

3.3.6 IMPLICATIONS

It is important to note that interest groups generally against wolf recolonization see inherent conflict because only a very limited amount of habitat is not being used for residential, agricultural or tourism-related applications (M. Schwery, personal communication, April 2013). Further protecting sheep and goat herds in alpine landscapes implies increased overhead and decreased (already minimal) profits, and it may even be a practical impossibility (M. Schwery, personal communication, April 2013). Despite this, the clear majority of both Swiss and Italians polled are in favor of wolf recolonization (Boutros, 2003).

The general populace seems to be mostly ambivalent about the entire large carnivore (including wolf) situation (U. Breitenmoser, personal communication, May 2013). The overall attitude trends towards large carnivores (including wolves) could be swayed in favor of or against large carnivores by media sensationalism (U. Breitenmoser, personal communication, May 2013). As discussed in Chapter 1, although the actual danger to humans that wolves pose is very small, it is almost inevitable that at some point a negative wolf – human interaction will occur. Such low-frequency, high-impact events may shift public attitudes against wolves.

Assuming a continued positive attitude trend among humans towards wolves, Alaska-esque questions may arise as to what desirable wolf population numbers might look like. Reducing wolf populations to desired numbers, effectively in a socially acceptable way will present a further challenge. As has been seen in some parts of the US, once the public has been acclimated to viewing the wolf as protected, it can be politically difficult to lessen protection. Trends point to an increasing wolf population expanding its range in the Alps. If this potential is realized, important ecological and cultural consequences will likely follow.

Centuries of intense Alpine forest use and livestock presence, as well as decades of recovering prey species have led to a significant lack of forest biodiversity in forests of this

region (McShane & McShane-Caluzi, 1998). Studies such as those of wolf reintroduction into Yellowstone National Park, point to the potential of restored wolf populations to reduce browsing damage, to influence restored forest biodiversity, and to lead to cleaner water, and other positive externalities. Increasing forest biodiversity not only fulfills legal and treaty obligations, but may also reduce forest vulnerability to catastrophic weather events such as 1999's hurricane Lothar, which caused 1,780 million CHF of damage to forests and proximal human infrastructure (Swiss Federal Institute for Forest, 1999).

The ability of planning and approaches to mediate the effects of wolf recolonization on regional culture remains to be seen. There are three main factors at play: First, the most vulnerable type of livestock production to predation, sheep, faces important questions of economic sustainability of the practice. Second, shepherding is an important component of local cultural identities. Shepherding is also important to national identities. Just the knowledge that the shepherding is taking place in the Alps is valued and a link to a shared cultural heritage. This is part of cultivating the Kulturlandschaft (translation: culture-landscape) many are fond of. Third, although there is no subsistence hunting to speak of, hunting is a very important tradition to particular groups. Hunting interest groups have continued to maintain a counter-recolonization stance in the policy-making process (U. Breitenmoser, personal communication, May 2013), though publicly they express openness. These factors were prominent in the original downfall of wolves in the region, and some traditional practices will require significant adaptation to survive the wolf's return.

CHAPTER 4 DISCUSSION & CONCLUSION

4.1 DISCUSSION

The three cases explored in this study occur in notably different socio-ecological contexts. They represent three very different ways of attempting to govern wolves in transboundary regions. Interestingly, the two agreements between the NPS and State of Alaska were as dissimilar from each other as either was from the Western Alps agreement. I conducted institutional research, and communicated directly with many of the elite actors involved in the agreements proper, and their larger contexts. For each case study, I utilized that information to analyze the institutional and larger socio-ecological context. I analyzed the inception, execution, and cessation of functionality in each agreement. Finally, I analyzed the impacts of the agreements and their cessation, on wolves, associated ecosystems, and human stakeholders.

4.1.1 LIMITATIONS

Three main limitations to my research should be noted. First, communication with some apparent, main actors in the agreements and the larger context of the agreements proved impossible and/ or impractical. Access to some higher level decision-makers, for example was elusive. In other cases, the number of important actors was so great that a sampling approach had to suffice. The second limitation was the intermittent unavailability of actors for checking and rechecking the accuracy of details as new information came to light. Finally, the evolving nature of the socio-ecological contexts imposed the third main limitation. The evolving nature of empirical facts, and the passage of time, may influence the memory of interviewees. This is especially true for actors still grappling with the complexities of wolf management, reflecting back on the way things were.

4.1.2 COMMONALITIES

Three distinct commonalities between cases emerged. First all three cases deal explicitly with the governance of transboundary wolves. Second, each case represents an attempt at coherence between management entities of separate, adjacent jurisdictions. In each case, each entity has differing wolf-related management approaches and priorities. Finally each case focuses on an agreement which ultimately ceases to function.

4.1.3 Disparities

Disparities are more prevalent than commonalities between cases. The following summarizes and juxtaposes primary points of comparison.

4.1.3.1 Differing Ends

To begin with, each agreement existed for very different reasons. The Yukon-Charley agreement existed for two reasons. It existed from the NPS point of view to protect Yukon-Charley wolves. The end desired by the NPS was continuous protection of Preserve wolves from Alaska's wolf-control efforts. ADFG saw the agreement as a means to get along with the NPS. Getting along could build public goodwill towards ADFG. The agreement also could have helped avoid negative consequences of conflict with the NPS, and may have achieved tacit approval of predator control by the NPS.

Proponents saw the Denali Wolf Buffer as a means to provide sustained opportunities for visitors to Denali to see wolves. The BOG saw the buffer as a means to placate wolf advocates. The BOG also saw the buffer as at least a symbolic fulfillment of its Alaska Constitutional objective of regulating resources allocation for the maximum benefit of all Alaskans.

One could say that the ends Italy, Switzerland, and France sought in signing the Trinational Agreement was the fulfillment of an obligation. This might be true at the level of the ministers who signed the agreement. Despite the agreement's stated objectives, the nations' management plans remained incongruent. Managers and scientists who I interviewed saw the agreement as a necessary recognition of a shared wolf population, and an opportunity to share expertise and experiences.

4.1.3.2 Differing Conception

The conception of the three agreements also varies. The most noticeable differences involve inception and institutional levels. In Yukon-Charley, the agreement was made between two high-level managers. David James was trying to stretch both ADFG and NPS mandates to reach his objectives. Greg Dudgeon was originally surprised at the offer, which he accepted. The larger

institutional processes were not involved in the process. The agreement was handed down as a way of doing business that was mandated elsewhere.

Proposals from the public, NGOs, and agencies initiated the Denali agreement. The BOG brought the agreement into existence on its own regulatory authority.

In the Western Alps, the sudden reappearance of wolves triggered preexisting conservation treaties. Wolves and treaty obligations triggered the creation of national-level policies. Incoherence between national-level policies triggered top down, International peer pressure. Peer pressure served as an impetus for the creation of the Trinational Wolf Agreement.

4.1.3.3 Differing Functionality

The functionality of each agreement was different. In Yukon-Charley, ADFG agreed not to shoot NPS radio-collared wolves. The NPS provided information to enable the identification of these wolves. The agreement was in no way legally binding. It did meet its explicit objectives temporarily, but failed in the long run.

By regulating the Denali Wolf Buffer into existence, the BOG handed management to the ADFG. The ADFG was responsible for publishing the closure. The agreement was legally binding until it was rescinded. The ADFG would be responsible for wildlife troopers to enforce the closure. Although the agreement worked in the sense that wolves presumably were not harvested in the buffer zone, changes in the probability of viewing buffer zone wolves by Denali visitors before, during and after the buffer is unclear.

The Western Alps agreement worked simply by requiring regular meetings between managers to discuss management directions, requiring the creation of technical groups, and requiring one country inform the other before management actions on wolves were taken. This agreement was not legally binding, and was only negligibly successful. In the long run, the goals of the Trinational Agreement are being met, but through another avenue.

4.1.3.4 CESSATIONS

As mentioned above, cessation of functionality is one common thread between the agreements. Cessation of functionality, like most aspects of the agreements came about differently. The agreement between Yukon-Charley, and the ADFG ceased to function because of a communication break-down, contradictory mandates, and a lack of formal structure. A mistake precipitated the original disruption of the agreement. The lack of formal agreement to refer to, or formal structure to fall back on exacerbated the inherent tension of working between contradictory mandates. Finally, the NPS found the agreement ADFG could offer insufficient. The limited amount of wolf protection was insufficient for a collateral acceptance by the NPS of a predator control effort.

The Denali agreement ceased to exist, the same way it was created. BOG regulated it out of existence. The BOG did not eliminate the buffer to prevent visitors to Denali from seeing wolves. The buffer was removed for a combination of scientific and political reasons. Regarding science, the BOG expressed doubt about that the buffer effectively achieved its stated objective (i.e. increasing wolf viewing opportunities). Regarding politics, before the NPS became officially involved, the buffer was an agreement between the public and the State. Once the NPS joined the process, proposing buffer expansions, the BOG saw a federal agency asking the state to manage state lands adjacent to NPS lands in a certain way. This official NPS involvement seems to have nudged the sovereignty issue over a threshold, leading to the lifting of the buffer.

The Alpine Convention replaced the Trinational Wolf Agreement. Switzerland found the new platform more amenable than the old, and jumped at the opportunity. Italian officials agreed that the agreements were more-or-less the same. Italian officials none-the-less lamented, at least, the unofficial cessation of meetings stipulated by the Trinational Agreement. Contacts in both countries agree that the new platform is more holistic.

4.1.3.5 IMPACTS

With respect to transboundary wolf management, one of the most important overarching questions is the actual impacts of the agreements to socio-ecological systems, compared to the systems in the absence of the agreements.

4.1.3.5.1 WOLVES & ECOSYSTEMS

The impact the agreement's cessation on Yukon-Charley's wolves is negative, at least in the short term. Following the cessation of the agreement, David James reported the most successful year ever for wolf-control in the Fortymile region. The long-term prognosis for wolves in the region of Yukon-Charley is unanswerable without more knowledge about the future of wolf-control, and management of the Fortymile caribou herd. The agreement itself did not affect many wolves on a landscape or ecosystem scale. But continued wolf-control over the larger region in perpetuity might cause undesirable, landscape scale, ecosystem changes. The minimum 20% of wolves that must remain after a wolf-control effort, in addition to present landscape connectivity will probably avoid catastrophic impacts to the regional ecosystem. This Landscape connectivity includes Yukon, Canada, where lethal wolf-control efforts are banned (Yukon Fish and Wildlife Management Board, 2012). A further failsafe begins with the nutritional analyses of caribou. Caribou are regularly tested. The idea is that if caribou display signs of insufficient nutrition, their habitat is at the upper end of caribou carrying capacity. If testing shows insufficient nutrition predator control will theoretically be reduced or halted. Reducing or stopping predator control would allow predation to prevent caribou from over-browsing their habitat and causing excessive ecological harm. If caribou and wolf population estimates are accurate, and management actions adapt to new information, the potential impacts of selective wolf-control should be minimized.

In the Denali region's Wolf Townships, similarly to the Yukon-Charley case, wolf predation on ungulates may decline. Trappers did not intensely trap wolves before the Denali Wolf Buffer was created, but NPS studies do show a decline in wolves since the buffer was removed. To what extent wolf hunting and/ or trapping in the Wolf Townships is responsible for the decline is, as yet uncertain. The Wolf Townships represent a small area adjacent to a large, protected area.

The impact of the agreement and the agreement's cessation on the Park's ecosystem is likely to only have effects on a local scale.

The only agreement that seems to have unfolded in favor of the wolves about which the agreement was written is the Western Alps agreement. Although the agreement itself did not succeed, wolf populations across the region are increasing. The presence of the wolf now seems to be permanent. Of the three case studies, the Western Alps ecosystems face the most drastic ecological impacts from recolonizing wolves, and wolf management policies. The main question regarding the potential of wolves to positively affect the Western Alps ecosystem is whether the number of wolves needed to cause these changes can be socially tolerated.

4.1.3.5.2 STAKEHOLDERS

Driving all policies and agreements are human values. Stakeholders are engaged in the fate of the wolf either because they perceive themselves to be positively or negatively affected.

Local stakeholders in and around Yukon-Charley are likely to benefit from the dissolution of the agreement. They may have increased hunting opportunities, and sometimes have anti-federal attitudes. Unlike Denali, Yukon-Charley is little known, especially nationally and internationally. The wolf-control issues are therefore less salient to the larger (e.g. national) camps for and against wolf-control, suggesting that at least for a time the local pro wolf-control constituency may be able to benefit from their preferred management regime.

Proponents of the Denali Wolf Buffer are incensed by the removal of the buffer, and will almost certainly rally a significant effort to address the BOG when the moratorium is lifted. Whether tourists will avoid visiting Alaska or Denali because of reduced viewing opportunities is unclear. It appears many Americans maintain a high existence value for Denali wolves. The removal of the buffer certainly does not improve the State of Alaska's image for these stakeholders. Denali's visitor information highlighting the wolf situation has the potential to further damage the State's image. The removal of the buffer was certainly gratifying to its

opponents. However, the number of stakeholders who will functionally benefit from the now open Wolf Townships is very small.

In the Western Alps, the Trinational Agreement was and is largely unknown to the public. It also had very little direct impact on actual transboundary wolf management. The impact, however, of recognizing a shared population has already had important ramifications. The Alpine Convention, WISO platform has more political buy-in than the Trinational agreement. The Alpine Convention has a robust education and outreach component.

Wolf recolonization is dynamic and uncertain, but the trend favors an increasing wolf population. All stakeholders stand to gain from increased ecosystem services from increased biodiversity as a result of wolf (and other large carnivore) recolonization. The direct impacts to these stakeholders by an increase in wolves (and other large carnivores) sufficient to bring about these ecological changes is unknown. Continued successful recolonization will certainly make the economics of small-scale, small animal husbandry more challenging. Changes to traditional land uses will impact cultural identity at multiple scales. Wolves' adaptability and behavior may alter present broad support and tolerance by humans. How many wolves there will be, where they will live (e.g. rural, sub-urban, urban), and what they will eat (e.g. wildlife, domestic livestock, pets), will all play into the yet to unfold question of impacts to stakeholders.

4.2 Conclusion

Over 100 years ago, large carnivores were almost completely extirpated from the Western Alps. Based on the needs and worldview of the protagonists, this was perfectly rational at the time. We now know that removing top predators from a system can cause massive ecological changes (Stolzenberg, 2008), that negatively impact ecosystem services and other human values. It would be arrogant for us to think that any management strategy pursued today is objectively correct. I believe that variability of management approaches across a landscape increases adaptive capacity. If we make a mistake on a small scale (e.g. one management unit) negative consequences are limited. If on the other hand, we make a collaborative mistake on a huge scale, correspondingly huge consequences are probable. If historic Alpine Arc wolf management had consistently been successful, there would have been no remnant population

to recolonize the region now. That being said, coordinated management (e.g. information, capacity) is imperative to sound resource management, especially regarding transboundary natural resources (see 1.2.1). This is increasingly true based on the transboundary, regional, continental, and global importance of the resource.

People recognize the importance of transboundary coordination. Generally effective transboundary agreements can be found for anadromous fish, caribou herds, and migratory bird species, for example. However, there are limitations to the value of laboriously developed transboundary agreements on climate change and climate change adaptation, for example. Similar limitations appear to apply, as seen in this study, to wolves. Shared goals and problems, as opposed to conflict mediation, provide fertile ground for coordination. Italy, Switzerland, and the rest of the Alpine Convention share the reality of recolonizing wolves, and general public support for protective legislation and wolf presence. So although the Trinational Agreement ceased to function, a new framework came into play. Coordinating management in contested situations presents larger challenges.

Institutional path dependency and political tension between management entities are primarily responsible for the cessation of the three agreements detailed in this thesis. The State of Alaska's trajectory of institutionalized resistance to taking into account changing state and national trends in public opinion is a sign of this path dependence. The NPS, as well has been accused of agency drift, for example of managing Yukon-Charley more similarly to a National Park than a National Preserve (D. James, personal communication, May 2013). It has been suggested that tensions emerge as institutions "bearing the imprint of the past" try to address current and future problems (Jacobson C. , 2008; Putnam, 1993). This tension is also evident in the Western Alps case study. Wolf recolonization, and increasing wolf population and impacts were certainly current, and prospective future, problems at the time the Trinational Agreement was created. The trajectory was for national control in a national context. Attempts in the Western Alps to coordinate and accept differing approaches created the tension that lead to the cessation of the Trinational Agreement. In both the Alaska and Western Alps cases, it is

important also to note that entities resisting changes in majority opinions often see their position as equitable to the minority.

Hunters, trappers, and shepherds are a numerical minority in both regions. Many people not immediately involved in these activities also value the continued existence of hunters, trappers, and shepherds and their lifestyles. At local, regional and national scales, people idealize 'traditional' lifestyles. These lifestyles partially define places and cultures that broad constituencies identify with.

Ultimate decision makers are usually appointed by administrations with contemporary political leanings. Positional survival provides a strong incentive for these decision makers to maintain consistency with the administration's political goals, even if it means institutionalizing non-cooperation. This can be seen in present inter-agency (i.e. State versus Federal) conflict such as in ADFG's obstructive participation and non-participation in the United States Fish and Wildlife Service's (FWS) Landscape Conservation Cooperatives (LCCs), discussed below. It also exists in interviewees' recollections of past administrations' amiability to interagency coordination. In all three case studies biologists and field-level managers interviewed expressed disappointment about the cessation of the agreements, and the impermissibility of coordinating more with their transboundary counterparts. Many field level biologists continue to unofficially coordinate with their counterparts (C. Westtin, personal communication, April 2013; D. James, personal communication, May 2013). In the words of one higher level manager "Go ahead, work with them, just don't tell me about it" (anonymous, personal communication, May 2013).

The situation in the preceding paragraph may, in the long term, be a good omen. Though higher level appointees are often limited by political agendas, lower ranks are eager to cooperate. As Jacobson points out, policy makers are powerful but ephemeral influences on agencies (2008). Career professionals are most affected by and aware of gaps between their agency and the norms, values, and cultural beliefs of society, whose wildlife they manage (Jacobson C. , 2008). They are also in the best position to "pursue a strategy of resistance or strategic change" (Jacobson C. , 2008).

Despite their cessation, the three transboundary wolf agreements are hardly meaningless. The Yukon-Charley agreement contributed to the solidification of opinions in a regionally, politically important audience. The Denali agreement brought local, national, and even international attention to the wolf management situation, and is likely to do so again once the moratorium passes. The Western Alps agreement led to a public and political consensus that the Alpine countries share a single wolf population. The results are not transformational, but they are important. The agreements' ultimate outcomes contribute incrementally to large-picture changes.

Both Alaska and the Western Alps are experiencing a rural to urban human population migration. Correspondingly, traditional activities associated with rural lifestyles such as subsistence hunting and shepherding face decline. This decline challenges the resilience of immediate and peripheral cultures and identities. Opposition to the wolf is symbolic in the Alps because the wolf's resurgence is both a result of and catalyst for rural to urban migration. In both the Western Alps and Alaska, support of wolf-control (or opposition to protection) is a unifying symbol of rural communities and rural culture against top-down political control and the growing urban, 'environmentalist' majority (Skogen & Krange, 2003).

As societal values shift from predominantly utilitarian to a more protectionist orientation towards wildlife (Manfredo, Teel, & Bright, 2003), the wolf appears to come along for the ride. In the Alps, continuing recolonization seems all but unstoppable under present law and general public support. Only an extremely high-impact event (e.g. a pack of wolves eating a kindergartner) is likely to lead to serious wolf re-extirpation attempts. Even if public opinion reversed course, society has changed since the last extirpation; unregulated, high-intensity shooting, trapping, and poisoning wolves is as unlikely as aerial wolf-control in densely populated Europe. Re-extirpation would be difficult.

In Alaska, the increasing cost of aerial control has an inverse relationship with public approval of the means. Wolf-control will likely continue indefinitely, on increasingly smaller and more irrelevant scales corresponding with available funding, until it goes away. Political will to

drastically increase predator control in Alaska only seems likely if the national mood towards wolves takes a massive downturn in the face of recolonization in the contiguous states.

Some transboundary resource issues may require institutional transformation (Kates, Travis, & Wilbanks, 2012). I do not believe that to be the case with wolf management. In fact, I believe incremental, gradual change is less likely to further marginalize already disenfranchised constituents than a radical or abrupt change to the status quo would. Federal versus State tension, though unpleasant, keeps contrasting perspectives and questions of equitability at the fore. The conversation has to take place, though, and the possibility of transboundary coordination should be facilitated.

Similar in ways to the Alpine Convention, I suggest the US Department of the Interior (DOI)-initiated Landscape Conservation Cooperatives (LCCs) would serve well as an avenue or template for transagency, transboundary coordination. LCCs are self-directed, applied science partnerships. Participation in LCCs is voluntary, and they have no regulatory authority of their own. LCCs seek to address landscape scale threats to biological and cultural resources, too large for any one entity or jurisdiction to address alone. Landscapes are loosely delineated by ecoregion (stretching into adjacent countries). Agencies and organizations within that region may have a seat at an LCC Steering Committee. An agency or organization must generally have management or science capacity to have a representative on an LCC Steering Committee.

LCCs are neutral and free of the complications that accompany direct management responsibilities. LCCs can provide a valuable, structured platform. LCC partners are reminded of their organizations' regional connectedness, and aware of other organizations' activities on a personal level. LCCs work to identify shared needs and goals among stakeholders. Most importantly LCCs are a venue for communication and cross-agency relationship building. There are benefits to simply having all parties at the table, each with an equal voice. This is the level where agreements and understandings are made.

4.3 Suggestions for Further Study

Wolves make some people intensely emotional. One logical question is whether in the context of this emotionality, dispassionate, rational wolf management is possible. Certainly in all cases strong positive and negative attitudes towards wolves contributed to the fleetingness of wolf management agreements. I argue that each agreement owes its existential brevity to its own unique composite of factors. The wolf is one factor, not the factor. Future studies should examine the resilience of similar agreement structures regarding other transboundary wildlife. Cases should explore controversial and less controversial species, species regularly consumed by humans, and species peripherally important to human consumption. Studies should also seek out successful, long-lived agreements regarding transboundary wolves, and analyze factors leading to success. Such studies have the potential to implicate or exonerate the wolf as implicitly unmanageable.

Where attitudes towards wolves appear most trenchant, they are often projections of societal factors (Lopez, 1978). Societal factors such as class, gender, racial, and power related struggles provoke strong feelings. These feelings manifested in wolf issues lead to heightened emotional responses when the issues are brought to a public venue. Studies of social and cultural projections onto wildlife have been informative, but limited in scope and quantity. Likewise, studies of the ecological implications of these projections will continue to be important for how wildlife is managed in an inevitably value driven context.

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