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TRANSLOCATION AND ERADICATION: A CASE STUDY OF THE ADVOCACY COALITION FRAMEWORK IN UTAH'S BIGHORN SHEEP MANAGEMENT

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ABSTRACT

Bighorn sheep once thrived throughout the diverse and rugged terrain of Western North America, ranging from Canada down to New Mexico and east to the Midwest. Contemporary herds have dwindled in number and only occupy a fraction of this historical range, favoring steep and drier terrain such as the cold mountain deserts of Utah. This loss in habitat and population is not an uncommon theme in wildlife management and is partially caused by the regular suspect of human exploitation. But one additional challenge is presented to bighorn sheep: fatal contact with their domestic sheep relatives, which carry pathogens that lead to bacterial pneumonia and cause mass die-offs.

This theoretically driven case study of bighorn sheep management in Utah explores coalitions of government actors and interest groups surrounding reintroduction of bighorn sheep on public lands. It applies the Advocacy Coalition Framework to analyze two coalitions of actors in Utah's bighorn sheep management: wildlife agencies and hunting interests groups joining to promote robust bighorn populations, and the minority coalition of sheep ranchers wary of more reintroductions and closures to their grazing allotments. The recent bighorn reintroduction in the Mineral Mountains of Southwest Utah shows that negotiation agreements and policy-oriented learning may gradually reduce tension between coalitions caused by the prior internal shock of the Payette National Forest case and move the subsystem towards equilibrium.

INTRODUCTION

> Mountain sheep, like all other native fauna and flora, are part of the structure and heritage of North America. Despite all of the efforts exerted toward their conservation, wild sheep face a precarious future. They are an ecologically fragile species, adapted to limited habitats that are increasingly fragmented. Future conservation efforts will only be successful if land managers are able to minimize fragmentation. According mountain sheep their rightful share of North America and allowing them to inhabit the wilderness regions they require is a responsibility all Americans must shoulder. It is our moral and ethical obligation never to relent in the struggle to ensure their survival (Bunch et al., 1999, pp. 209-237).

The laws of nature and government prevent any natural resource, particularly wildlife, from existing undisturbed and uninfluenced. All species interact with the land on which they reside, land that multiple stakeholders with varying agendas also utilize. These stakeholders further interact with like-minded, forming coalitions, and opposing groups to influence policies in a process known as the Advocacy Coalition Framework (ACF). This interconnectedness combines issues such as public land management, grazing policy, and science-directed policies to form a species-management solution that should be as straightforward as preventing bighorn sheep from getting pneumonia.

However, no solution is ever that straightforward, and Utah's wildlife policy subsystem is no exception to the policy processes that govern wildlife. Bighorn sheep management in Utah is further complicated by the spread of *Mycoplasma ovipneumoniae (M. ovipneumoniae)*, the bacteria that causes pneumonia and is regularly spread by domestic sheep (Besser et al., 2012). *M. ovipneumoniae* affects both the Rocky Mountain bighorn in the northern part of the state and desert bighorns down south, and creates tensions with nearby sheep ranchers whose animals get blamed for causing the outbreaks. Using the ACF provides a framework to examine Utah's management of bighorn sheep by addressing the interactions of actors advocating for expanding the historic range of bighorn sheep and protecting the grazing rights of domestic sheep on public lands. The majority coalition includes natural resource officials at the state and federal level, including Utah Department of Wildlife Resources (DWR) and the federal Bureau of Land Management (BLM). Hunters represented by the Wild Sheep Foundation (WSF) also participate in this coalition and aim to nearly double Utah's bighorn population (Williams, 2020). Sheep ranchers, represented by groups such as the Utah Farm Bureau and the regional Public Lands Council, challenge increased bighorn numbers after a legal case in the Payette National Forest that closed the majority of sheep grazing allotments on the public land to minimize contact between the two species (Huntsinger, Sayre, and Wulfhorst, 2012; Idaho Wool Growers Association v. Vilsack). This minority coalition

claims this case went against the multi-use policy of public lands and has set a precedent for future reintroductions that infringe upon grazing rights. However, a study of the recent successful reintroduction to the Mineral Mountains indicate a possible shift in the policy subsystem towards equilibrium and reduced tensions as more bighorns are successfully translocated without displacing domestic sheep.

BACKGROUND

Bighorn sheep once thrived throughout the diverse and rugged terrain of Western North America, ranging from Canada down to New Mexico and east to the Midwest (Wild Sheep Working Group, 2015). Contemporary herds have dwindled in number and occupy just a fraction of their historic range, favoring steep and drier terrain such as the cold mountain deserts of Utah (Huntsinger, Sayre, & Wulfhorst, 2012). Bighorn sheep were once plentiful in Utah, but their distribution declined significantly by the early 1970s and is still well below the state's modeled habitat, shown in Figure 1 ("Utah's Conservation," 2018). This loss in habitat and population is not an uncommon theme in wildlife management and is partially caused by the regular suspect of human exploitation. Moreover, one additional challenge to the declining population of wild bighorn sheep: fatal contact with their domestic sheep relatives.

Bighorns are particularly susceptible to respiratory illnesses such as pneumonia. Domestic sheep herds often carry pneumonia-causing bacteria, including *M. ovipneumoniae*. Without obvious symptoms, infected herds have quietly contributed to extirpations of bighorn sheep throughout the Western United States. Besser et al. have found the pathogens domestic sheep carry lead to pneumonia outbreaks in wild populations of bighorns with mortality rates of nearly 100% within 90 days of contact, a much higher rate than other ruminants. Reports of pneumonia outbreaks in wild sheep following contact with domestic sheep have occurred over the past 100 years, a longstanding pattern that indicates how detrimental association between the two species can be (2012). As a result, pneumonia is the leading cause of bighorn mortality and thereby compels a need for a policy of separation between wild and domestic sheep, as there is no effective cure (Smith et al, 2014).

Complicating matters even more is that bighorn and domestic sheep habitats interlap in the summer, when ranchers drive their herds up to graze in the mountain rangeland. The majority of this grazing occurs on public lands, including state lands managed by their respective wildlife resources division such as UDWR, federal areas owned by the BLM, and National Forests managed by the Forest Service under the USDA. Ranchers utilize these public areas by purchasing permits to graze their sheep in specified grazing allotments (Huntsinger, Sayre, & Wulfhorst, 2012; UDWR, 2018b). Bighorns, however, adhere to no such boundaries, and fatal contact between the sheep species may occur.

In “Disease and predation,” Smith et al. calls for wildlife management to further a policy of separation between bighorn and domestic sheep to limit the transmission of *M. ovipneumoniae* to bighorn sheep on public lands after they determined pneumonia is a leading cause of bighorn mortality. They advocate that, “management activities should be geared towards eliminating contact between diseased and healthy populations” (Smith et al., 2014). This suggestion provides evidence that a policy of separation ought to be practiced, and also illustrates how contact with domestic sheep is deadly for bighorns. This analysis builds credibility for and provides a background in the current separation policy wildlife officials support, which is often enacted at the expense of sheep ranchers.

The history of sheep management in the Payette National Forest in Idaho shows precedence for this policy. Huntsinger, Sayre, and Wulfhorst relate the “landmark case” of sheep ranging in Payette as an example of the government’s shift of public land from multiple use to single-species management (2012). The Forest Service closed up to 70% of the grazing allotments in order to reintroduce more bighorns without the risk of disease transmission. Ranchers of the Idaho Wool Growers Association defended their own interest by appealing this decision, but the removal was upheld in the Ninth Circuit Court of Appeals (Idaho Wool Growers Association v. Vilsack). The authors offer the perspective that, “in the Payette, agency protocols reflect short-term temporal scales in the move toward separation of species as well as single species management rather than an understanding of the rangelands as a system of interactive effects” (Huntsinger, Sayre, and Wulfhorst, 2012, para. 63). This provides background on the fears and perspectives of sheep ranchers who lose grazing allotments to bighorn sheep. It also lays the grounds for groups like the Utah Farm Bureau and Utah Wool Grower’s Association to oppose UDWR translocation effort by calling for Memorandums of Understanding (MOUs) and additional research out of concern for losing their rights to graze.

UTAH POLICY

Twenty-nine bighorn sheep were reintroduced to Antelope Island in Northern Utah in 1997 (highlighted in the upper black box of Figure 1) with the hopes of establishing a nursery herd to rebuild populations across the state (Imlay, 2019). Over 30 years later in 2018, the herd had grown to 150 and state officials relocated 200 healthy bighorns to other locations (Wild Sheep Working Group, 2015). However, an outbreak of respiratory disease triggered a mass die off that same year. The exact origins of the disease are unknown, but biologists believe the illness may have originated with bighorns wandering off the south side of the island due to increasingly low water levels and contacting domestic sheep, or from biologists who mingled with other wildlife and brought the pathogens back to the island (Williams, 2020). The pneumonia outbreak left only 26 bighorns on the island a year later, and those were eradicated to stave off the disease spread and reintroduce a healthy herd (Imlay, 2019).

In an ironic turn of events, the former nursery herd now needed transplants. In 2020, a year after the eradication and two after the outbreak, 25 healthy sheep were brought to the island from a herd in Montana and a fence along the island's southern side was installed to prevent the bighorns from wandering into contact with domestic sheep (Williams, 2020).

This was not the only disease outbreak in the state. One of the most devastating die-offs killed over 600 desert bighorn in the San Juan area in 1985, all in less than 400 and likely from pneumonia originating from domestic herds (Utah WSF, 2019). Still, this case shows how readily respiratory illness can spread among even seemingly isolated herds. The devastation of Antelope Island justifies how some sort of separation device, whether fence or closed grazing allotments, is needed for bighorns to expand from their current distribution in Figure 2 to fill more of the vacant habitat modeled in Figure 1.

Translocations have continued around the state, most recently in the Mineral Mountains west of Beaver, shown in the lower black box of Figure 1, in October 2019. Fifty-one desert bighorns from a herd in Nevada nearing carrying capacity were released into the rocky landscape and sheer cliffs that make ideal habitat for the animals (Utah Division of Wildlife Resources, 2019). The Mineral Mountains are also primarily public land used for cattle, which do not carry *M. ovipneumoniae* and therefore pose little risk to wild sheep, and the nearest active grazing allotments for problematic domestic sheep are 6 to 10 miles away. It appeared to be a prime location, and the plan was approved by wildlife officials in May 2018 (Maffly, 2018). Hunters and the Utah chapter of the WSF, a hunting group dedicated to enhancing wild sheep populations, supported the relocation and contributed money for translocating the animals and restoring habitat in the Mineral Mountains with hopes of expanding hunting opportunities (Utah WSF, 2019; Maffly, 2018).

Nearby woolgrowers, however, opposed the plan, afraid a federal judge could close their nearby grazing allotments in order to protect the reintroduced sheep. Such a response occurred during bighorn protection measures in the Payette National Forest. Local woolgrowers, Utah Farm Bureau, and other groups representing livestock owners insisted on first establishing a Memorandum Of Understanding (MOU) with the BLM to conduct further research on the spread of *M. ovipneumoniae* before the plan moved forward (Maffly, 2018). Regional organizations like the Public Lands Council and American Sheep Industry Association, who work with Utah Wool Grower's Association, drafted letters calling for additional research (American Sheep Industry Association & Public Lands Council, 2018). The DWR recognized the tensions in these stakeholders and emphasized they did not intend to jeopardize any agricultural livelihoods and would exterminate any wandering bighorn sheep over closing domestic sheep's grazing allotments (Maffly, 2018). The wild sheep were supposed to be reintroduced in the fall of

2018, but the DWR drafted an MOU during that period (Brown, 2018; UDWR, 2018a). The bighorns were introduced the next fall.

Although the planned reintroduction in the Mineral Mountains faced some initial opposition, the conservation project was finally accomplished with the collaboration of the many local and federal leaders. This restoration program in the Mineral Mountains is just one piece in the state's management plan that seeks to bring the bighorn population up from 4,150 to 9,000, but still shows the processes, players, and challenges in implementing this policy (Williams, 2020). To provide a more in-depth examination of this policy, this research will focus on the roles and motivations of the DWR, BLM, Wild Sheep Foundation, Utah Wool Grower's Association, Utah Farm Bureau, and Public Lands Council in this bighorn management through the lense of the ACF.

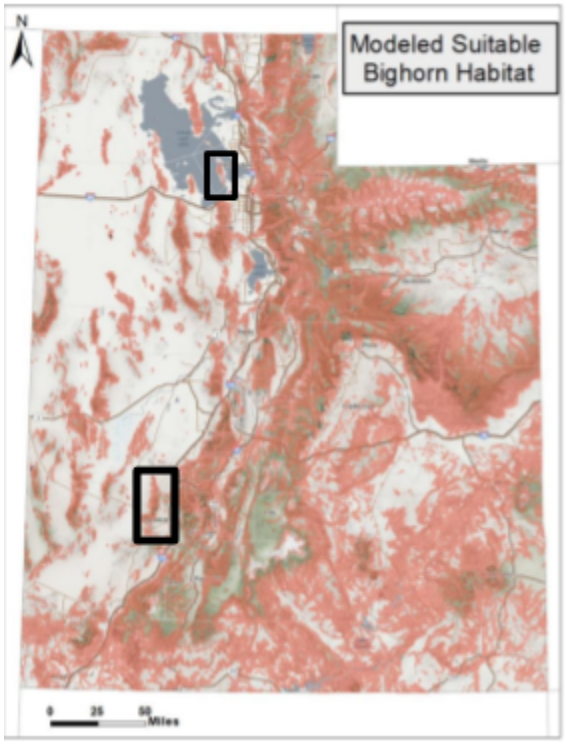

Figure 1: Modeled suitable bighorn sheep habitat in Utah (UDWR, 2018)
(boxes added for emphasis)
Upper box: Antelope Island herd
Lower box: Mineral Mountains herd

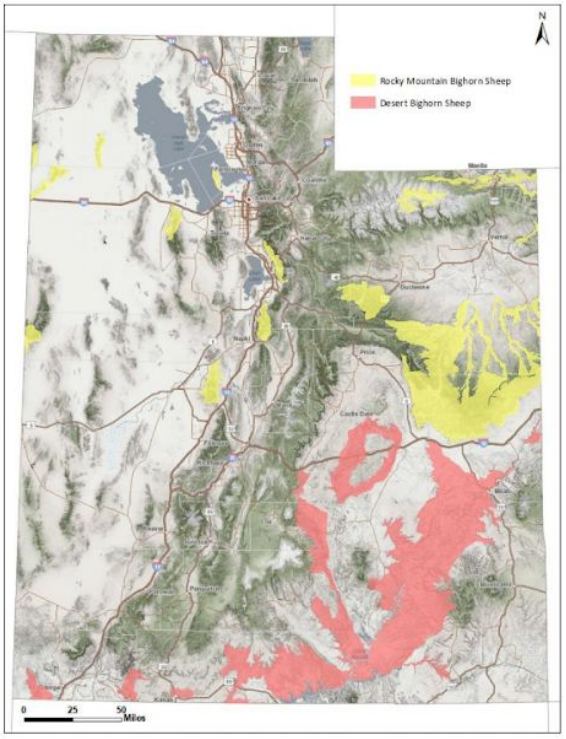

Figure 2: Bighorn sheep distribution by subspecies in Utah, 2017 (UDWR, 2018)

THE ADVOCACY COALITION FRAMEWORK

The Advocacy Coalition Framework (ACF) was established in the early 1980s by Paul Sabatier and Hank Jenkins-Smith to explain how various actors influence the policy process in a system outside the traditional realm of political science that focuses on

typical government mechanisms such as the three branches of government, voting, and lobbying (Jenkins-Smith et al., 2018). This framework is better equipped to describe local wildlife management programs where the main governing body is an unelected state agency, like the Utah's DWR, and policy is implemented by a string of wildlife management plans that remove and relocate species. The framework also allows for multiple layers of the government to overlap, as federal agencies like the BLM can influence state wildlife plans when the species reside on public lands (Huntsinger, Sayre, & Wulfhorst, 2018). The Mineral Mountains case shows how county officials are also consulted in the process and policy is finally implemented with the collaboration of all these actors (UDWR, 2019b).

These layers illustrate the different policy subsystems that occur. A policy subsystem is the set of actors that deal with a policy problem, like the various agencies and organizations involved in managing bighorn sheep. Subsystems are semi-independent and can overlap with other systems, which is clearly seen with wildlife on public lands (Jenkins-Smith et al., 2018). Because bighorn sheep often reside on public lands that have a number of other uses, the policy is often influenced by the public land subsystem. Grazing is a main use of public land and can directly interfere with the health of bighorn sheep, and the grazing rights subsystem encompassed in the more general public lands policy gives the most direct public opposition. It is the tension between the grazing and wildlife advocates that drives bighorn management in the Mineral Mountains and throughout Utah, and therefore is the focus of this study.

Actors organize into coalitions in the policy subsystem and operate with a three-tiered belief system. The strongest and most basic of these are the deep core beliefs, which are not policy-specific and very unlikely to change (Jenkins-Smith et al., 2018). These are the vague values like personal freedom, nature, and the role of government, and can be applied in a variety of ways. Next are policy core beliefs, which operate on a policy subsystem level and form the coalitions. In the case of sheep management, opposing policy core beliefs may be a multi-use policy for public lands, a separation policy of domestic and wild sheep, or protecting wildlife over livestock and vice versa. The most flexible beliefs are secondary beliefs, which address specific issues like budgets and specific methods for separating and preserving bighorn sheep. They can change with additional knowledge and even vary among actors within the same coalition (Jenkins-Smith et al., 2018). These beliefs are the "hows" of a policy, the method for implementing the "whys" of the deep and policy core beliefs. Aligning these core values organizes actors into coalitions, who can then determine the best means to achieving their goals by exploring and shifting their differing secondary beliefs.

The ACF distinguishes between dominant coalitions, or the actors in charge and furthering its agenda, and minority ones (Jenkins-Smith & Sabatier, 1994). State officials and hunting interest groups advocating for more bighorn sheep are the dominant coalition

in this subsystem as reintroductions continue throughout the state, which shows their agenda is being furthered.

Peters explains that policy subsystems "tend to be rather stable until they are confronted by some external shock or by an opportunity for learning from other successful cases" (2019, p. 45). External shock and policy-oriented learning are the original two mechanisms under ACF hypotheses that produce a major policy change, but internal events and negotiated agreement are also now considered avenues for change (Jenkins-Smith et al., 2018). There are some elements of all these mechanisms in bighorn sheep management, but internal shock, policy-oriented learning, and negotiation agreements are the most recent and prevalent methods for changing policy.

There have been no recent external shocks, like a drastic shift in regime or economic condition, large enough to produce a major policy shift in the wildlife management policy subsystem. Jenkins-Smith et al. also stipulates that such events increase the likelihood but "require one or more enabling factors (causal mechanisms)" to produce change, which can include shifting agendas and coalition resources. Pneumonia outbreaks could be considered an external shock, as it is a drastic event and not controlled by the subsystem, but these have been occurring for at least 100 years and have not been aided by other enabling factors (Besser et al., 2012). The regularity of the outbreaks in Utah and throughout the west is not quite a shock to the subsystem, as policy measures have long been implemented to combat the disease.

Internal shock, like policy scandals and failures, are another method to produce change. Jenkins-Smith et al. explain, "internal events can be expected to confirm the policy core beliefs of minority coalitions and increase doubts about the core beliefs of the dominant coalition and bring into question the effectiveness of their policies" (2018, p. 146). This is indeed the case after the Payette National Forest reintroductions. After the courts upheld the decision to close a majority of the grazing allotments in order to reduce contact with bighorn sheep, wool growers learned to equate these more wild sheep with less domestic sheep grazing, which directly threatens their livelihoods. This instance seems to be where ranchers near the Mineral Mountains opposed reintroductions out of fear that a judge would "order their flocks off public lands" (Maffly, 2018).

Policy-oriented learning shifts general assumptions of actors more than influencing specific policy, making it a slower mechanism of change than the first two. Learning can, however, institute major change when coupled with an internal or external shock (Jenkins-Smith et al., 2018). Reintroduction in general is not a new practice or internal shock- the first desert bighorns were translocated into Utah in 1973 and over 1,000 have been released since the start of the program (UDWR, 2019b). But more relocation projects that successfully separate sheep without closing grazing allotments, like the Mineral Mountains, may gradually shift ranchers' perceptions of the policy and contribute to subsystem equilibrium.

Subsystems can also undergo change through negotiated agreement by opposing coalitions. A negotiation most commonly arises from a "hurting stalemate" in which neither party wishes to proceed under the current conditions and have no other options (Jenkins-Smith et al., 2018). The basis of this method appears in the MOU of the Mineral Mountains case. The DWR did not technically need to enter into an agreement with the Utah Farm Bureau or Public Lands Council and had the option to continue as scheduled, but they delayed the reintroduction plans to honor the request for a MOU. This minimized hostilities and served everyone's interests, a model which may be used in the future.

Through analyzing these hypotheses, it is apparent that policy-oriented learning and negotiated agreements may help the minority coalition concerned with domestic sheep overcome the internal shock of the Payette case and lead to successful reintroductions like in the Mineral Mountains. It also indicates that multiple mechanisms of the ACF may be needed to enact change in policy subsystems.

COALITION 1: ROBUST BIGHORN POPULATIONS

The DWR manages Utah's bighorn sheep as "a once-in-a-lifetime hunting species," and thousands from inside and outside the state apply for both Rocky Mountain and desert bighorn tags. These opportunities are relatively limited, with 27 Rocky Mountain and 47 desert bighorn permits offered for Utah residents in 2017. Nonresidents have an even slimmer chance of a Utah wild sheep, as only 3 and 4 permits for each subspecies was available in the same year, respectively (UDWR, 2018b). The number of tags has been increasing with population size, and it is the goal of both hunters and wildlife officials for this trend to continue. The DWR also seeks to expand viewing opportunities for people interested in learning about bighorns but not hunting them, providing sheep viewing days and guided hikes on Antelope Island (UDWR, 2018b). These subspecies are one example of the value wildlife bring to Utah's economy.

Aside from the contributions bighorns make to tourism and the economy, the DWR acknowledges the intrinsic value of the animals and their part in the rugged ecosystems of Utah's mountains means they ought to be managed "regardless of their recreational uses" (UDWR, 2018b, p. 13). These contributions provide insight to the DWR's deep core value of wildlife and their policy core belief of separation policy. Nevertheless, it is often the recreational uses that fund the conservation efforts.

Organizations like Utah's WSF (also referred to as Utah Foundation for North American Wild Sheep, or FNAWS) help fund DWR management plans through high priced conservation hunting tags and banquet fundraisers, which have paid for many grazing conversions and transplants, and participate in research projects (UDWR, 2018; Utah WSF, 2019). Unlike traditional hunting tags, conservation permits are auctioned for high prices and 90% of the revenue is donated to the DWR with the goal of conserving

wildlife throughout the state. Utah's Conservation Permit Program was founded after one desert bighorn conservation permit was auctioned for $20,000 in 1980 and the proceeds dedicated to the DWR's efforts to reestablish bighorn herds ("Utah's Conservation," 2018). Having no budget for a restoration program from the state legislature, UDWR Director Doug Day took this money and reintroduced new herds in Southern Utah (Utah WSF, 2019). This established a wild sheep management program and opened the door for a coalition of actors committed to similar policy goals to contribute.

The Utah FNAWS chapter was founded in 1991, holding the same deep core beliefs of valuing wildlife and a goal to recover wild sheep populations (Utah WSF, 2019). The WSF continues to hold fundraising banquets and are one of the groups allowed to sell conservation permits ("Utah's Conservation," 2018). To reduce tensions with wool growers, WSF has also purchased conservation easements and funded other habitat acquisition projects in which ranchers are compensated for giving up their grazing allotments- contributing millions of dollars to the cause (Utah WSF, 2019). This supports a secondary belief of shifting grazing allotments with compensation, which is similar to the UDWR policy to not "force domestic sheep operators off of public lands or out of business." The state does, however, advocate for voluntary land conversion to cattle grazing to reduce risk of disease transmission (UDWR, 2018b, p. 9). This is a gentler policy than the Forest Service practiced in the Payette, although the federal agency could be grouped in the same coalition as these Utah actors.

The actors in this majority coalition value robust bighorn sheep populations and hunting opportunities, working towards the same goal with similar secondary beliefs. Jenkins-Smith et al. explains that, "actors within an advocacy coalition will show substantial consensus on issues pertaining to the policy core, although less so on secondary aspects" (2018, 148). The WSF supports the separation policy and core values of the state with a slight variation on secondary methods for restoring healthy populations as they are able to contribute more funding to implement more extreme separation measures. This also supports the stipulation that administrative agencies usually have more moderate positions than interest groups, because they have more interests to consider and a broader base to represent (Jenkins-Smith et al., 2018).

COALITION 2: MULTI-USE PUBLIC LANDS

The grazing rights policy subsystem interacts as wildlife policy affects ranchers on public lands. Ranchers hold the core belief of a multi-use policy that posits public land ought to be used for ranching and a variety of activities, not just the management of a single species (ASI, 2018). The BLM also claims this multi-use policy, but admits the presence of bighorns will affect how they allot grazing permits (BLM, 2016). This and the internal shock caused by the Payette case may give ranchers reason to distrust the federal agencies and oppose any reintroductions.

Ranchers are represented by a variety of groups, including the Public Lands Council, Utah Farm Bureau, and Utah Wool Grower's Association that works with the American Sheep Institute (ASI). Groups wrote letters and spoke out against the DWR with demands to cancel the proposed project or first complete an MOU (Maffly, 2018; ASI & PLC, 2018). Ranching groups do not contribute the funds or share the core beliefs with the state like hunting interests do, but the DWR recognized the subsystem tensions, partnered with them to develop an MOU, and has not limited domestic sheep grazing. As of an agency meeting one month after the reintroduction, five wild sheep wandered off the management area and were all lethally removed as promised (UDWR, 2019a). So far, ranching livelihoods have not been damaged.

The ranchers exhibit what the ACF coins as a "devil shift," when actors focus more on losses than wins and therefore "exaggerate the power and maliciousness of their opponents" (Jenkins-Smith et al., 2018, p. 141). This exaggeration may promote cohesion within coalitions, strengthening the "us" versus "them" mentality that riles individual action (Sabatier et al., 1987). Utah wool growers emphasized the fate of their Idaho counterparts in the Payette and feared the same fate if bighorns were moved to the Minerals, even though the Forest Service was not involved in the project and it went against UDWR policy. Domestic sheep interests projected their loss in the Payette into Utah's reintroduction plans, but the agencies involved produced a different outcome.

With a completed MOU, bighorns on the mountain, and no reported disease transmissions or closed grazing allotments, a shift in the secondary beliefs and underlying assumptions may gradually occur in Utah's grazing coalition. This case is an example of the power internal shocks have in influencing beliefs, and that a combination of policy learning and negotiated agreements may gradually lead to equilibrium.

CONCLUSION

The ACF analyzes policy change through the relationships of the actors, uncovering their values and motivations and explaining why the current policy exists. Understanding these mechanisms in the context of a policy subsystem can predict how policy will shift as the subsystem moves toward equilibrium. This shift happens through four mechanisms, three of which are apparent in Utah's bighorn sheep management. An initial internal shock from Payette National Forest brought a policy of stringent domestic and wild sheep separation at the expense of closing 70% of domestic grazing allotments in the area (Idaho Wool Growers Association v. Vilsack). This led to wool growers in Utah distrusting officials and planned reintroductions. They perceived a difference in government agencies' core beliefs that shifted away from the multiple use doctrine on public lands. The devil's shift phenomena exaggerated differences and facilitated more distrust of those advocating for robust bighorn populations.

The majority coalition in Utah has since sought to ease the tensions this created, with conservation easements and advocating only for voluntary grazing conversions (UDWR, 2018b). The recent Mineral Mountains reintroduction was still met with opposition, yet a completed MOU and successful promises of not altering domestic grazing are examples of negotiated agreements and policy learning. These may be indications of a policy model that may shift minority coalition beliefs and contribute to subsystem equilibrium. This study indicates that multiple mechanisms may be needed to produce change, and will need to be examined in the future as more reintroductions are proposed.

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