

A Three-Part Report to The Summerlee Foundation

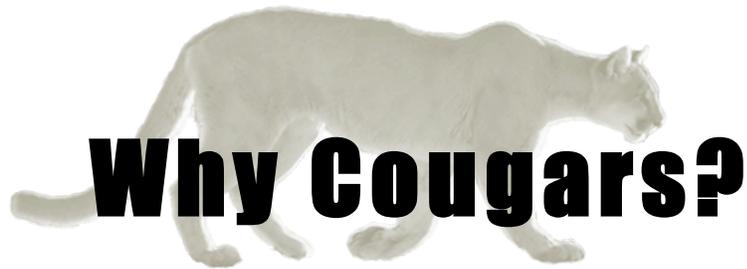


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Why Cougars?

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Introduction

A reasoned argument for increased support of cougar protection by funders and non-profit organizations is the purpose of this article. The reasons are relevant not only to those who care about cougars, animal welfare, and animal rights, but also to those who care about healthy ecosystems and healthy democratic institutions.

Our cougar populations are threatened by a myriad of factors—directly, by unsustainable killing, but also indirectly, by wildlife management culture and institutions. Our current wildlife management has its sights fixed on the rear-view mirror as our society and culture move forward to embrace and address the challenges facing wildlife in a rapidly changing world. The goal of sustaining cougars cannot be divorced from the goal of reforming our wildlife management institutions and, more broadly, fostering our moral embrace of all sentient beings—including cougars. What follows is our perspective on why cougars should be a focus of conservation and animal protection efforts.

Ecosystem effects

To start with some biophysical aspects: the large size, carnivorous habits, and wide distribution of cougars combine to engender ecosystem benefits that surpass those of any other large carnivore in the lower 48 states. These ecosystem services are often described in terms of “trophic cascades,” which, in simple terms involve the restructuring of ecosystems through the effects of a top predator (such as cougars) on the behaviors and numbers of herbivores, with resulting benefits for organisms such as butterflies and birds, the structure of riparian vegetation, and even water quality and quantity.¹ Although bears are predators, they are not the hyper-carnivorous animals that cougars are, which is what you need to affect herbivores enough to see benefits farther down the trophic ladder—at the level of vegetation and smaller animals.² Wolves are like cougars in this regard but, unfortunately, are restricted to comparatively small enclaves in the northern Rocky Mountains and upper Midwest.³ By contrast, cougars can be found throughout the U.S. west of the 102nd meridian and are spreading east into areas such as the Ozarks of Arkansas and Missouri (Figure 1, below).

In recent years, primarily through the efforts of Bill Ripple and Bob Beschta, growing numbers of studies have shown the ecosystem benefits generated by cougars through the mechanism of trophic cascades. These researchers found that woody vegetation had deteriorated in several National Parks after the

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extirpation or reduction of cougar populations during the early 1900s—including oak woodlands in Wind Cave and Yosemite National Parks and riparian vegetation in Zion.⁴ Moreover, in Zion, they found that losses of birds, butterflies, and aquatic invertebrates had accompanied loss of vegetation along streams. They speculated that cougars not only kept deer populations under control but also discouraged deer from spending time in woody areas such as along stream banks, where browsing meted out greater damage, and where the deer were particularly vulnerable to ambush. Scientists who study trophic cascades distinguish these as “numeric” and “behavioral” effects.⁵

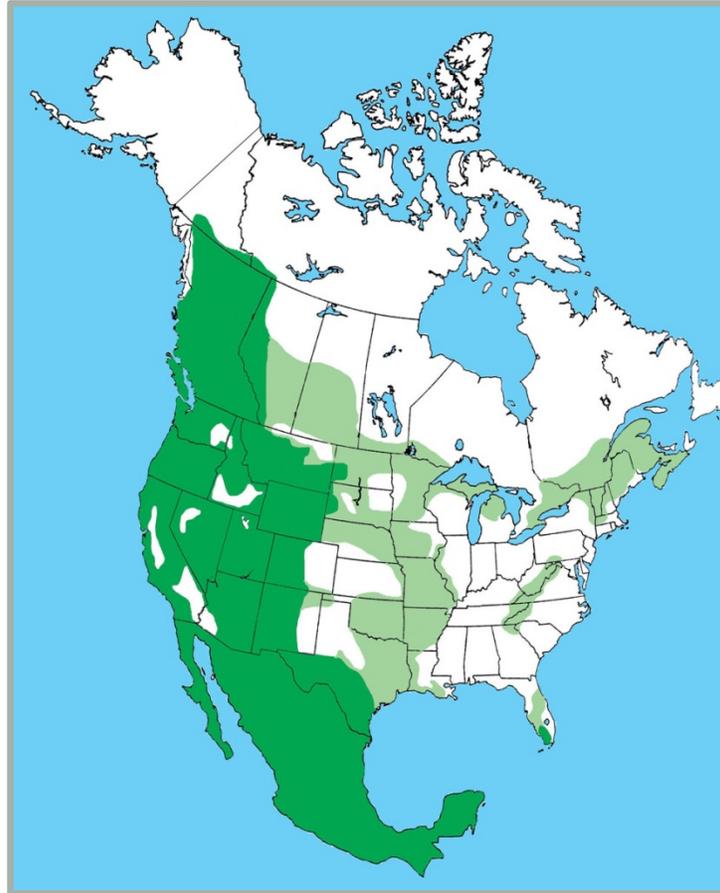


Figure 1. The current distribution of cougars in North America. Dark green denotes core range whereas light green denotes areas where sightings of cougars and cougar sign have been reported with varying degrees of reliability.

The numeric effects of cougar predation on populations of prey such as deer are nuanced, but in a beneficial way. There is little evidence that cougars limit or severely depress prey, except when prey populations are well below carrying capacity or when cougars are subsidized by abundant alternative prey.⁶ More often, cougars tend to knock the highs and lows off prey population increases and declines, which benefits ecosystems because most of the damage from over-grazing or browsing by herbivores occurs when herbivore populations “overshoot” carrying capacity, which can then cause catastrophic population declines if food resources are damaged. This kind of effect by a predator is called population regulation, which is widely considered to be positive.⁷ The resulting dynamic is one of gradual prey population increases and declines tracked by increases and declines of cougar populations lagging behind by 5 years or so.⁸

And there is evidence of yet other ecosystem benefits provided by cougars. For one, ample research has shown that cougars tend to select the old and infirm along with the young as prey, which contributes to the regulating effect of cougar predation.⁹ This evidence contradicts theoretical expectations that cougars are indiscriminate because they are ambush predators, meaning they take whatever prey cross their path without exercising any selectivity. But this does not seem to be the case. Cougars have also been found to kill far more medium-sized predators, such as coyotes and bobcats, than had previously been thought.¹⁰ This is important because one of the more destabilizing phenomena in recent decades has been “mesopredator release,” which is essentially the burgeoning of populations of smaller predators with the loss of larger carnivores, with resulting havoc wreaked on populations of birds, small mammals, and even larger mammals such as pronghorn and deer.¹¹

Finally, some research has suggested that top predators such as cougars can indirectly mitigate harmful effects of the spread of disease and climate warming, and also contribute to redistributing nutrients in beneficial ways. More specifically, mule deer infected with diseases such as Chronic Wasting Disease are killed at a higher rate than other deer, which can slow the spread of this particularly insidious pathogen.¹² Research with other predators has also suggested that predation can concentrate and slow the cycling of nutrients in ecosystems.¹³ Nutrient concentrations in the form of decomposing kills can lead to increased landscape-level heterogeneity, with resulting increases in biodiversity. Fewer, warier, herbivorous prey can lead to more carbon remaining locked in organic form—as foliage—and out of the atmosphere, where it can contribute to climatic warming.

Surprisingly, it turns out that if we want to benefit biodiversity, the structure of riparian vegetation, the health of our stream ecosystems, and even populations of cougar prey, ensuring the health of cougar populations is a good way to achieving these ends.

Engagement with the public

Cougars also offer unique prospects for fostering broad-scale change in how people value wild animals.¹⁴ They invite us to explore new relations with the “wild,” both in nature and in ourselves—to accommodate and even embrace a vital aspect of the world that our culture has taught us to fear. And one key dimension of this opportunity resides in the fact that cougars are so widespread, which means that there are many more people who have had personal experiences with cougars—either seeing one in the wild or simply being aware that they are wild and free on the landscape. This matters because these personal touchstones are often the means by which people view animals, nature, and even themselves. The prospect is that more people will find their way to a more positive view of others—including animals.

Durable long-term changes in institutions and management practices necessarily occur in the context of culture change—broader changes in worldviews and perspectives.¹⁵ And there are several encouraging and well-documented trends afoot insofar as our relations with animals are concerned. Stephen Kellert describes a century-long trend toward increasing views of animals as sentient beings deserving of our moral consideration, correlated with a decline in views espousing domination and use.¹⁶ Peter Singer and Steven Pinker document the related emergence of a broader moral universe, especially in western cultures, typified by the “rights” revolution, of which the current frontier is the affordance of rights to animals.¹⁷ More to the point here, longer-term trends for advancing the cause of animal welfare are auspicious, with the opportunity, through cougars, of encouraging and accelerating these trends.

Another advantage conferred by cougars arises from our rapidly increasing knowledge of them. A concerted research effort during the last 15-20 years throughout the western hemisphere has borne

considerable fruit. We now know a great deal about the private and public lives of cougars, including details of behaviors, difference in life strategies between males and females, effects on ecosystems, relations with prey, relations with humans, and effects of management on cougar populations.¹⁸ This wealth of knowledge is a great resource for reaching out to and educating the public. Such educational outreach has the prospect of enriching the views of those who already care about cougars and awakening curiosity among those who don't.

Encouragingly, positive views of cougars are already widespread. Numerous studies of peoples' attitudes and perspectives have shown that the vast majority support conserving cougars and, moreover, that they support having widely distributed populations—to a greater extent than they support the same for wolves and grizzly bears.¹⁹ The public opinion surveys reveal that people recognize cougars as a valuable part of healthy functioning ecosystems and believe these animals have a right to exist. Many people view cougars as iconic emblems of the West and our wilderness heritage. When presented with the issues, the majority of the public also supports protecting kittens, opposes trophy hunting, and finds leg-hold trapping and hound-pursuit to be objectionable. The key to productive investment is in figuring out how to mobilize people with favorable perspectives, empower them with knowledge, and provide them opportunities where they can make a positive contribution to change.²⁰ And there is ample need for a mobilized public, given the magnitude of threats currently facing cougars and virtually all other larger carnivores.

Threats and current status

Even though cougars are consummate survivors, they are currently beleaguered by numerous threats that have reversed the positive trends emerging during the 1980s and 1990s. In contrast to wolves and grizzly bears, cougars were able to hang on in most of the western U.S. despite widespread persecution during the late 1800s and early 1900s, primarily because of their higher reproductive rates and tendencies to be active during night and in rugged heavily wooded terrain.²¹ Even so, cougar populations were severely depressed and remained so during a bleak period between 1880 and 1950 when they were classified as varmints in virtually all states, subjected to widespread bounty hunting, and limited by a dearth of deer and elk—their principal prey.²² But by the 1970s and 1980s cougars in every state except Texas²³ had been classified as big game, bounties had gone away, hunting had been limited, and prey populations were burgeoning. This all resulted in the increase and spread of cougar populations during the 1990s and early 2000s, most notably to the east into the northern Great Plains.²⁴

But these increases mobilized the concerns and stimulated the antipathies of those benefiting from and with control over state wildlife management—big game hunters and livestock producers. Hunters blamed cougars for declines in deer populations that most scientists ascribed to deteriorating habitat and climate.²⁵ Many livestock producers resented any and all livestock losses that could be blamed on predators. As a result, the sights of state wildlife management were set on cougars, with resulting dramatic increases in prescribed sport hunting of cougars in most states during the last 15 years²⁶—including in states newly recolonized by cougars, such as North Dakota, South Dakota, and Nebraska, where cougars have previously been protected.²⁷ This increasingly lethal state management was also boosted by the fears of an often ill-informed public arising from a trend toward increasing numbers of human-cougar conflicts near urban areas, a trend that peaked during the mid-1990s.²⁸

Evidence primarily from cougar harvests, especially relative to harvest targets or quotas, suggest that most cougar populations in the West are in decline, although it is difficult to know trends for certain, given the paucity of resources invested by most states in monitoring.²⁹ This uncertainty is amplified by lack of information about levels of poaching and the fates of kittens orphaned when their mothers are killed by sport hunters. And unsustainable levels of sport hunting are the primary culprit of population declines,

driven by ill-informed perceptions and by a widespread tendency among hunters and wildlife managers to demonize predators of all sorts.³⁰ Ironically, much of the research that has emerged during the last 20 years has shown that sport hunting likely *increases* rather than reduces both livestock depredation and threats to human safety,³¹ and that deer population declines are driven by adverse weather and deteriorating habitat, not by predation.³² But management of cougars continues to be driven by myth and misinformation, and to support a clientele of hunters seeking to eliminate predators for more opportunities to hunt deer and elk.³³

The vulnerability of cougars to this ill-informed management is shared with large carnivores worldwide. Large carnivores comprise one of the most threatened groups of animals on Earth—for predictable reasons.³⁴ Their large size and carnivorous habits often put them in conflict with people, and their low reproductive rates make them particularly vulnerable to the deaths that people mete out from unreasoned fear or in retaliation for livestock losses.³⁵ The upshot is that management of carnivores such as cougars needs to be precautionary and fully cognizant of the vulnerability of animals that, paradoxically enough, can appear so formidable.³⁶ Unfortunately, management of the cougars in western North America is the antithesis of precautionary.

Although cougars are still widespread, their status is by no means secure. Ill-informed and perverse state wildlife management, combined with the fears among the general public, have led to unsustainable killing of cougars. Currently, cougars in more heavily developed areas such as coastal California, the Wasatch Front of Utah, and the Rocky Mountain Front of Colorado are particularly threatened by suburban sprawl and the fragmenting effects of highways.³⁷

Opportunities for reforming wildlife management

Put succinctly, management of wildlife by state agencies is almost wholly for the benefit of hunters and fishers. The primary and often explicitly stated goal is to produce a “harvestable surplus” of hoofed herbivores such as deer and elk for hunters to kill.³⁸ The primary ethos is one of domination, utilization, and objectification. Goals, objectives, and problems are defined such that the logical solution or focus of management is killing something.³⁹ There is little or no room for intrinsic valuation of animals or consideration of welfare and rights. Under this regime, predators such as cougars are considered to be competitors for opportunities to kill elk, deer, and other herbivores.⁴⁰ With the exception of a few states such as California, the goal of most state management is to reduce numbers of cougars and otherwise manage them as a means of providing sport for hunters.⁴¹ There is essentially little to no consideration given to other values, and virtually no credence is given to research showing the ecosystem benefits of healthy cougar populations.

The uncharitable views of cougars common among managers and hunters have led to tolerance for, if not encouragement of, cruel treatment of cougars under auspices of state management. In most states, few meaningful provisions are made to prevent the orphaning of kittens from the “harvest” of suckling mothers.⁴² In Arizona, hunters are prohibited only from killing females with kittens at their side—which is essentially meaningless, given that kittens are left in dens during their most vulnerable early weeks of life. In Mexico, Texas, and New Mexico, legal leg-hold trapping of cougars is permitted, with poor or non-existent enforcement of the minimal provisions to prevent suffering of trapped animals. The pursuit of cougars with hounds is also widely allowed, not only to kill cougars but also for the “fun” of it—to entertain the dogs and people involved.⁴³ Cruelty seems to be built into the very bones of most state-sponsored cougar management.

By design and by function, the institution of state wildlife management excludes people who care primarily about the welfare of cougars and esteem them for intrinsic rather than instrumental reasons—or value them simply because they like to see cougars in the wild.⁴⁴ These marginalized people constitute the majority in virtually all states, and this majority continues to increase every year.⁴⁵ The exclusionary nature of state wildlife management is sustained by culture, the composition of governing commissions, and sources of revenue.⁴⁶ The vast majority of commissioners and agency personnel are self-described “avid hunters,” who tend to see wildlife in terms of opportunities to kill them for sport. This orientation, in turn, is economically sustained by the almost complete reliance of state wildlife agencies on revenues generated from the sale of hunting licenses and from taxes on firearms and ammunition.

Cougar and animal welfare and rights advocates have beat their heads against this rigid system for decades. Some gains have been made, but only after strenuous efforts in the media, the courts, or through ballot initiatives.⁴⁷ In the end, though, these gains have only been short-lived or at the margins. In Oregon and Washington, for example, voters banned use of hounds to hunt cougars (in most states hunters rely on hounds to chase and corner cougars). However, the state wildlife agencies responded by an astronomical increase in cougar hunting permits, which resulted in an *increase* in numbers of cougars being killed compared to before the ban on hounds.⁴⁸ Likewise, in Arizona, cougar hunting regulations were revised to give the appearance of conforming to the comparatively more progressive norms of other states, but in a way that preserved every bit as many opportunities to kill cougars.⁴⁹

This long, frustrating history has led many animal and wildlife advocates to conclude that the only way to reform cougar management is through more fundamental reforms of state wildlife institutions or through other forceful interventions, such as the ballot initiative in California that permanently banned sport hunting of cougars.⁵⁰ This is a daunting and necessarily long-term undertaking, but there are potentially huge benefits for wildlife, and the elements of such an effort are relative clear.⁵¹ One focus needs to be reform of finances; another, better representation of diverse values among commissioners; another, change in culture within the academic institutions that train wildlife managers; and another yet, mobilization of the engaged public to promote legislative change.

But reform of something as deeply entrenched as the institution or model of state wildlife management needs a concrete and charismatic face, which is where cougars come into the picture. Again, cougars offer a number of advantages in this regard compared to carnivores such as grizzly bears and wolves—and large predators are an ideal point of entry, given that so much of the pathology of state wildlife agencies is evident in their management of these animals. Unlike wolves and grizzlies, cougars do not carry the symbolic weight of being identified with the federal Endangered Species Act, which has mobilized the antipathy of state’s rights advocates and more ideologically strident hunters and organizations such as the National Rifle Association.⁵² The wide distribution of cougars also provides opportunities to engage with wildlife management in more states, including states where prospects for reform are best—Washington, Oregon, California, Colorado, and perhaps New Mexico.⁵³ By contrast, wolves and grizzly bears occur predominantly in states, where prospects of reform are bleakest—Idaho, Wyoming, and Montana.

As a bottom line, the long-term protection of our wildlife—including large carnivores—depends on reforming the institutions of state wildlife management, and cougars offer unique advantages for advancing conservation and animal welfare, especially compared to North America’s other large carnivores.

Gaps in funding and attention

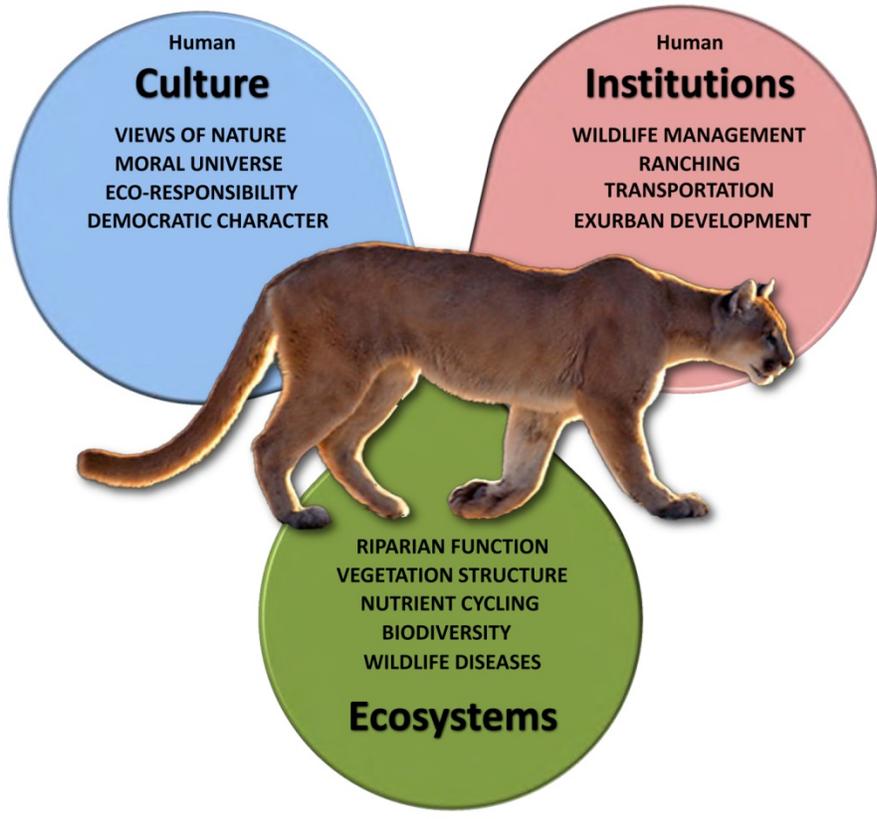
A final consideration when thinking about support for cougar protection is the current allocation of effort by environmental and animal welfare advocacy groups. In the last decade fewer organizations have been involved directly in protecting cougars, especially compared to efforts organized around wolves and grizzly bears.⁵⁴ One reason for this is the limited funding capacity of groups focused on cougar protection, especially compared to organizations focused on wolf and grizzly bear issues, but also because of the inability of organizations and advocates to feel they can have a say or make improvements in how cougars are managed.

This discrepancy of focus and effort is the predictable result of three factors that don't necessarily reflect opportunities for advancing the larger agenda of animal protection and ecosystem health. For one, wolves and grizzly bears have historically offered environmental groups the option of using litigation authorized by the Endangered Species Act to leverage gains for these species and their habitat.⁵⁵ This opportunity to coerce federal and state agencies is tied to federal protections such as ESA, whereas comparable opportunities for cougars under state laws exist in only a few places, such as California.⁵⁶ A second factor is that wolves, grizzly bears, and their threatened status have offered great fund-raising opportunities, which in some cases have generated huge amounts of money, much of which, ironically, gets channeled into organizational activities other than protecting wolves and grizzly bears.⁵⁷ Third, and related to the preceding point, wolves and grizzlies are charismatic species informed by a rich fabric of ancient myth, although, especially for wolves, this mythic construction has also led to rabid demonization.⁵⁸

the field of wolf and grizzly bear advocacy is more or less saturated by a number of national groups elbowing each other out of the way to gain the available resources and attention.⁵⁹ By contrast, cougars offer ample opportunities to advance animal protection and foster ecosystem health in a field of advocacy that is only sparsely populated by donors and non-profit groups.⁶⁰ As described above, strategic infusions of resources could yield considerable gains not only for cougars but also for other wildlife through the reform of state wildlife management.

Conclusion

Cougars should be a key focus of protection efforts for the numerous reasons articulated here. These animals are intriguing and beautiful in their own right, and carry the symbolic importance—and weight—that attaches to all large predators. They also enhance the health of ecosystems throughout the western U.S. in ways that no other large carnivore still can. Because they are so widespread, cougars furthermore engender unique opportunities for reforming regressive state wildlife management agencies in multiple regions, starting with the states ripe for change. Yet cougars are neglected by virtually all of the national and most regional environmental and animal welfare organizations. By contrast, wolves and grizzly bears are given ample attention despite their much more limited distribution in the lower 48 States, their more circumscribed effects on ecosystems, and their engendering fewer opportunities for changing wildlife management institutions. Moreover, because of their wide distribution, cougars offer rich opportunities for their supporters to engage with the people who live near cougars, in ways that could transform how they see not only cougars but also their moral universe. And, finally, the cougars themselves deserve our efforts to protect them.



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³ Explicit references to the literature cited can be found in the following end notes that link to corresponding numbers imbedded in the text throughout.

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Endnotes

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- ¹ Terborgh and Estes (2010) provide a synthesis of some of the latest research on trophic cascades.
- ² Ripple and Beschta (2012) specifically contrast the effects of omnivorous bears with wolves, which tend to be hypercarnivorous. Cougars are even more carnivorous than wolves.
- ³ The web site http://www.graywolfconservation.com/Wild_Wolves/history.htm presents a time series of maps showing the historic and current distribution of gray wolves in the contiguous United States.
- ⁴ Beschta and Ripple (2012) focus on geomorphologic and hydrologic effects; Ripple and Beschta (2006, 2007, 2008) focus on ecologic effects.
- ⁵ Here, again, Terborgh and Estes (2010) is a good reference.
- ⁶ We refer you to a number of publications that document the limited or contingent effects of cougar predation on mule deer (*Odocoileus hemionus*) population sizes (Ballard et al. 2001, Bishop et al. 2005, Bleich and Taylor 1998, Forrester et al. 2013, Hurley et al. 2011, Laundré et al. 2007, Pierce et al. 2012), with the exception of a study area where an increasing population of white-tailed deer (*O. virginianus*) subsidized the local cougar population, with substantial negative effects on the local mule deer population (Cooley et al. 2008, Robinson et al. 2002). Likewise, locally abundant mule deer can subsidize populations of cougars with sometimes (but not always) negative effects on sympatric populations of bighorn sheep (*Ovis canadensis*; Holl et al. 2004, Kamler et al. 2002, Logan and Sweanor 2001, McKinney et al. 2006, Rominger et al. 2004, Villepique et al. 2011). Ruth and Murphy (2010) provide an overview of relations between cougars and prey populations.
- ⁷ Ruth and Murphy (2010) offer a cougar-specific description of prey-limiting versus regulating effects.
- ⁸ Laundré et al. (2007), Logan and Sweanor (2001), and Pierce and Bleich (2003) all document cougar populations tracking and lagging behind prey populations. The same phenomenon is evident from time series of harvest data for cougars and mule deer published by Utah Division of Wildlife and Arizona Game and Fish Department.
- ⁹ Bank et al. (2002), Harrison (1990), Husseman et al. (2003), Kunkel et al. (1999), Logan and Sweanor (2001), Pierce et al. (2000), Ross and Jalkotzy (1996), and Ross et al. (1997) all document selection by cougars for the young, old, and infirm prey, contingent on prey body size.
- ¹⁰ Boyd and O’Gara (1985) and Mattson et al. (2007) present data for local study areas showing comparatively high levels of cougar predation on coyotes. Murphy and Ruth (2010) provide a summary of predation studies from throughout cougar range.
- ¹¹ Berger et al. (2008), Levi and Wilmers (2012), Prugh et al. (2009), and Ripple et al. (2013) document the ample evidence for release of mesopredators populations with the extirpation of large carnivores and the resulting damage to ecosystems.
- ¹² Krumm et al. (2010), Miller et al. (2008), and Sargeant et al. (2011).
- ¹³ Schmitz et al. (2010, 2014) provide an especially compelling argument for the effects of predators on carbon cycling and sequestration, as do Wilmers et al. (2012) and Strickland et al. (2013).
- ¹⁴ Gill (2010) provides an overview of the evolving ways that people see—and treat—cougars.
- ¹⁵ Clark and Munno (2005), Mattson and Clark (2010a), and Mattson (2014) describe this contingency of change in cougar management on culture and institutions.
- ¹⁶ Kellert (1996).
- ¹⁷ Pinker (2011) and Singer (1981).
- ¹⁸ Hornocker and Negri (2010) provide the most recent synthesis and compellation of cougar-related research, conservation, and management.
- ¹⁹ The published research by Campbell and Lancaster (2010), Casey et al. (2005), Davenport et al. (2010), Manfredo et al. (1998), Mattson and Clark (2010a, 2010b, 2012), Mattson and Ruther (2012), Riley and Decker (2000), Teel et al. (2002), Thornton and Quinn (2010), and Wolch et al. (1997) addresses peoples’ perspectives of cougars, in addition to the numerous surveys conducted by management agencies and non-governmental organizations that are not reported in the scientific literature.
- ²⁰ See Mattson and Negri (2014) for details of prospective strategies and tactics for advancing cougar protection and conservation.
- ²¹ Mattson (2014).
- ²² Anderson et al. (2010), Cougar Management Guidelines Working Group (2005), and Mattson and Clark (2010a) provide brief overviews of trends in cougar populations and cougar management.
- ²³ Texas Parks and Wildlife Department (2014).
- ²⁴ Bolgiano and Roberts (2005), Clark et al. (2002), Johnson (2000, 2002), Knopff et al. (2014), LaRue et al. (2012), Laundré (2012), Pike et al. (1999), Wilson et al. (2010), and Witsell et al. (1999) are a sampler of the publications documenting the spread of cougars east from recent historic ranges—sometimes with a considerable dose of skepticism. Overall, though, the evidence of cougar distribution expanding eastward is irrefutable.
- ²⁵ Mattson and Clark (2010a, 2010b) and Shaw (1994) describe hunters’ attitudes and perspectives; Ruth and Murphy (2010) provide a comprehensive overview of the effects of cougar predation on prey populations, especially in contrast to the effects of weather and habitat. Also, see footnote 6, above.

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- ²⁶ Anderson et al. (2010), Dawn (2002), and Appendix 2 in Hornocker and Negri (2010) provide an overview of cougar harvest trends.
- ²⁷ Nebraska Game and Parks (2013), North Dakota Game and Fish Department (2013), and South Dakota Department of Game, Fish and Parks (2010) provide details regarding current cougar sport harvest programs in these states recently colonized by cougars.
- ²⁸ Mattson et al. (2011) provide the most recent published data on cougar attacks as well as the factors driving human-associated risks.
- ²⁹ Dawn (2002) provides systematic evidence of declines and Negri and Mattson (2014) report perspectives on the current status of cougar populations expressed by close observers of cougar management.
- ³⁰ Nie (2003), Mattson and Clark (2010a, 2010b, 2012), Mattson (2014), Robisch (2009) describe perspectives held by hunters and wildlife managers.
- ³¹ Beausoleil et al. (2013), Cooley et al. (2009), Kertson et al. (2013), Peebles et al. (2013), Robinson et al. (2008), and Wielgus et al. (2013) all provide evidence for the perverse negative effects of attempting to control cougar depredation and risks to humans through the heavy harvest of cougar populations. Although compelling, this research is potentially limited by having been conducted in a single geographic region—Washington state and adjacent British Columbia.
- ³² See endnote 6 for literature relevant to regulation and limitation of cougar prey populations.
- ³³ Shaw (1994) provides interesting insights into hunters' perspectives.
- ³⁴ Estes et al. (2011) and Ripple et al. (2014) provide a global overview of the status of large carnivores as well as the potential consequences for ecosystems.
- ³⁵ Mattson (2004) provides an overview of the factors predisposing large carnivores to endangerment.
- ³⁶ Negri and Quigley (2010) provide a compelling argument for the importance of precautionary management and the means of doing so.
- ³⁷ Burdett et al. (2010), Dickson et al. (2005), Kertson et al. (2011), Morrison and Boyce (2009), and Stoner et al. (2013) describe some of the hazards and constraints besetting cougars living in human-impacted environments.
- ³⁸ Clark and Rutherford (2005), Decker et al. (1996), Haygood (1997), Jacobson and Decker (2006, 2008), Jacobson et al. (2010), Mattson and Clark (2010a), Nie (2004a, 2004b), and Riley et al. (2002) all describe the current pro-hunting bias of state wildlife management and the need for this institution to become more inclusive and representative.
- ³⁹ Mattson and Rutherford (2012) and Mattson and Clark (2012) present research showing how worldviews profoundly shape cougar-related perspectives and behaviors, including whether people favor lethal responses to cougar-related threats.
- ⁴⁰ Gill (2010), Mattson and Clark (2010a, 2010b), Mattson (2014), Nie (2003), and Shaw (1994).
- ⁴¹ Mattson (2014) and Mattson and Clark (2010a, 2010b) elaborate on these motivations and management imperatives.
- ⁴² There is no single reference for this compendium of management practices, although many are featured in the interviews reported by Negri and Mattson (2014).
- ⁴³ Brief summaries of allowed methods and provisions to protect kittens can be found in Cougar Management Guidelines Working Group (2005), Anderson et al. (2010), and Mattson and Clark (2010a), although the first of these references is somewhat dated.
- ⁴⁴ Clark and Munno (2005), Mattson (2014), and Mattson and Clark (2010a) describe the design of state wildlife agency decision-making with specific respect to cougar management.
- ⁴⁵ Mattson and Clark (2010b).
- ⁴⁶ Haygood (1997) and Mattson and Clark (2010a) provide explicit summaries of finances and commission composition for state wildlife management agencies.
- ⁴⁷ Mattson and Clark (2010a), Negri and Quigley (2010), and Appendices 4 and 5 in Hornocker and Negri (2010) provide summaries of cougar-related ballot initiatives and litigation.
- ⁴⁸ Mattson and Clark (2010a) and Negri and Quigley (2010).
- ⁴⁹ Mattson (2014) provides details on the configuration and history of cougar management in Arizona.
- ⁵⁰ Negri and Quigley (2010) provide some details of this successful initiative.
- ⁵¹ Mattson (2013) provides details of strategies and tactics for reforming state wildlife management.
- ⁵² Nie (2003), Lopez (2013), and Robisch (2009) describe the tradition of demonizing wolves in western myth and culture.
- ⁵³ Mattson and Clark (2010a) describe the basis for this "geography of opportunity" and present a map showing the states where reform is most likely to occur.
- ⁵⁴ The interviews of cougar-advocates described in Negri and Mattson (2014) substantiate this point.
- ⁵⁵ Arha and Emmerich (2011), Nie (2003), Guercio and Duane (2009), Ritzman (1991), and Sellers (1994) provide examples of—and commentary on—the use of litigation by environmental groups to advance the conservation of wolves and grizzly bears.
- ⁵⁶ Negri and Quigley (2010) and Appendix 4 in Hornocker and Negri (2010) describes uses of litigation to protect cougars.

⁵⁸ Lopez (2013), Robisch (2009), and Shepard and Sanders (1985) describe the mythic and cultural constructions of wolves and grizzly bears.

⁵⁹ Again, this is a statement supported by several decades spent closely observing environmental groups involved in wolf and grizzly bear conservation efforts.

⁶⁰ The interviews reported in Negri and Mattson (2014) elaborate on the scarcity of resources currently available to support cougar conservation and well as the lack of involved people and organizations.

The Grantee's Voice

A summary and analysis of interviews with Summerlee cougar grantees

Sharon Negri and David Mattson

8 March 2014

Sample Comments From Research and Advocate Interviews

On state game commissions:

The North American model of wildlife management has achieved some great things in the past, but a new avenue forward needs to occur. Most important, the political appointment of commissions that oversee state wildlife management agencies needs to change.

Our biggest threat is the game commissions. I don't see them changing. Why, when you have all the power, would you abdicate it? Why would those who now have the power want to force change?

Commissioners with no ecology or wildlife background (other than hunting) rarely see the larger picture. Until this structure changes, biology-based management of large carnivores will struggle, which is extremely frustrating for most biologists, including agency biologists.

On wildlife agencies:

If the agencies don't get on board with the cultural shift and what the public as a whole now wants, they are going to lose control of their management of these carnivores. They will lose it like they did in California.

We must reform wildlife agencies, or wildlife agencies are in big trouble, and wildlife is in big trouble too.

On the hunting and non-hunting public:

Just standing there and seeing a cougar being shot out of a tree . . . if the public ever saw how a cougar was hunted, they would be shocked! People don't know how the cats are hunted.

Hunters and fishers are the primary customers of state agencies. This is a continual problem, particularly in the West. These customers want to make sure they have a hold on decision making, and agencies want to make sure they are satisfied. These customers don't want "non-consumptive users" to have any power.

The flow of information needs to be part of our culture. We need a sustained effort. I run into a lot of people who are ignorant of cougars.

On Summerlee Foundation:

Frankly, no one else is funding cougars. Funding in our state is competitive with all the other issues facing wildlife. There is therefore a limited pool for funding for cougar conservation. No other funder has stepped into the realm that Summerlee has.

Summerlee is important because they fund hard core activism work and general education. This is huge. And Summerlee is in it for the long haul, which is a benefit because you can't change policy and culture overnight.

They are able to bridge the gap between advocacy and science, and not many foundations do this. They see the value of research and are incredibly diversified. Other foundations take more of a narrow approach to solve these complex issues. There is no silver bullet. And it is helpful that Summerlee does hard core advocacy. They understand there needs to be a culture shift.

Introduction

Summerlee Foundation funding to support cougar advocacy and research began in 1990. The first grant of \$22,000 was to the Mountain Lion Foundation in Sacramento, California, to support *Cougar, the American Lion*, the most comprehensive account at that time of the species' ecology, behavior and importance. Since then the Summerlee Foundation has contributed nearly \$2 million to advance the conservation of cougars in the form of research, advocacy, and rescue grants.

A focus on two programs—one of which has been Animal Protection—has enabled the Foundation to make significant contributions to the conservation of cougars. Conserving any wildlife species entails a comprehensive approach and implementation of multiple strategies. Summerlee Foundation's grant making has done just that. Spanning more than 23 years, grantees received funding to support a wide range of programs and projects focused on improving the research, management, and protection of cougars throughout the Americas. From Canada to Latin America, and from the west to the east coast of the U.S., Summerlee's grants reach across the range of the cougar's habitat, supporting strategies that encompass research to advocacy, media to education, and strengthening the NGO animal community by providing capacity-building trainings.

From small one-time to large multi-year awards, Summerlee grants have led to outcomes too numerous to list here but some of the more notable achievements have included the protection of kittens and lactating females, reduction of cougar hunting quotas and the spread of wildlife diseases, increased understanding of cougar ecology and behavior, and, for millions of people throughout its range, dispelling myths and raising awareness of the important role the species plays in maintaining healthy ecosystems. (see Appendix 1, for Summerlee's Influences on Cougar Conservation)

In 2014 the Animal Program and the Summerlee Board of Directors launched a comprehensive review of the Foundation's animal and wild carnivore funding. The purpose of this review is to help inform the development of a 10-year plan that will shape the Foundation's grant making priorities for the next decade.

To evaluate past funding effectively and make recommendations for future funding, the Summerlee Foundation engaged the Director of WildFutures, Sharon Negri, to interview recipients of Summerlee's animal grants. David Mattson, a Partner with People and Carnivores, was engaged to analyze the interviews and summarize the results and related recommendations, which are presented here. Although this report will be used to guide the Foundation, it is our hope that it may also be used to inform foundations, organizations, wildlife agencies, and policy makers about threats to, values of, and paths forward for advancing protections and conservation measures for cougars.

The interviews

The purpose of the interview process was to seek grantees' opinions about current and emerging issues surrounding cougars and to discover where the need for funding was greatest to ensure the long-term sustainability and protection of cougars. During the interview, grantees were asked a series of questions via telephone regarding:

- 1) How Summerlee's grant contributed to advancing cougar conservation
- 2) The relative importance of cougars compared to other carnivore species listed under the Endangered Species Act (ESA); for example, why cougars matter, given the pressing needs of other species such as wolves and grizzly bears
- 3) Existing and emerging concerns about or threats to cougars
- 4) Whether continued funding of cougar research and protection is needed, and if so, recommendations for where Summerlee Foundation's funding would have the greatest impact on the long-term conservation and protection of the species.

Over the course of three months, WildFutures interviewed 23 grantees and 5 distinguished cougar ecologists. Conversations were informal and lasted 40 to 70 minutes. Not every question was asked of all grantees. Instead, priority was given to letting interviewees shape the conversation based on their experiences, the context of their role, and the state of their grant. All grantees were informed prior to the call that their comments would be kept anonymous.

Analysis methods

In addition to discursive assessment of interview content, we also undertook a systematic quantitative analysis based on notes from the interviews. This process entailed reading the notes, distilling from them synoptic statements capturing an expressed perspective, and then ascribing that synoptic statement to the interviewee in a spreadsheet. The result was a matrix of statements in rows and interviewees in columns, with the body of the matrix filled by 1s and 0s, where a 1 denoted an expression of a statement by an interviewee, and a 0 a non-expression. The statements were not exact quotes, but rather an essentialization, which then allowed for more than one interviewee to be associated with each statement. The resulting matrix consisted of 125 statements x 22 interviewees, with a total of 376 recorded expressions (see Appendix 3)

Once we had constructed the matrix of interviewee statements, we proceeded to consolidate the statements into categories based on the broad topic being addressed and the perspective being articulated. This resulted in 17 topics organized under 7 broad categories (e.g., Identified Problems, Advocated Solutions, Research, etc.). Under the 17 topics we identified 51 perspectives, each comprised of 1-6 statements that expressed essentially the same view. We then summed the total number of times interviewees had articulated each generic perspective, and divided by the total interviews (22) to give us a standardized score that denotes the relative frequency with which a perspective was articulated. This allowed us to identify perspectives that were more widely expressed versus less widely expressed, despite the fact that each interviewee might have articulated it in a somewhat different way. We also differentiated interviewees by whether they were cougar researchers (11) or cougar advocates (9), with a category for the remaining two who did not handily fit either researcher or advocate. We made this distinction because we saw readily apparent differences in perspectives articulated by researchers and advocates.

(Note: Due to the extensive nature and breadth of Summerlee grants, this report does not cover the full extent of the Foundation's funding impact on the conservation and welfare of cougars; and due to the number of researchers and advocates interviewed, the report could not present in full all the thoughtful comments and creative solutions grantees provided.)

A summary and synthesis of the interviews

In what follows, we summarize and assess the interviews of Summerlee grantees, plus other cougar experts, organized by broad categories, beginning with *Why cougars?*, then *Identified problems*, then *Advocated solutions* and views on *Research as part of those solutions*, and, finally, thoughts on *Future Summerlee funding*. We organized each section around the more widely expressed perspectives that can be found in Appendix 2, but broadened to feature additional perspectives that introduced nuance or an important but not often articulated perspective (see Appendix 3). We follow our summary with a few concluding comments.

Why cougars?

The question “Why cougars?” was posed to the interviewees to gain their perspective on why the species deserves our attention, but also in contrast to a focus on wolves or grizzly bears, which are currently or have recently been protected under the federal ESA.

Three perspectives were widely expressed by both advocates and researchers on why cougars were deserving of protection; two of these featured the advantages of the broad distribution of cougars compared to wolves and grizzly bears. Each perspective is numbered, and the score denoting the commonness of each is given in parentheses after a succinct label (see Analysis Methods above).

Perspectives shared by advocates and researchers

1) *Ecosystem health (0.57)*—There was nearly universal agreement from advocates and researchers that given the broader distribution of cougars, they have substantial effects that enhance ecosystem health over areas more extensive than for wolves and grizzlies. The effects mentioned included controlling the abundance and distribution of otherwise over-abundant prey species (for example, deer), with benefits in the form of greater biodiversity and protection of riparian areas. Cougars also cull the sick and weak and, through that, enhance the overall health of prey populations. One interviewee noted that cougar kills helped distribute and accelerate the recycling of nutrients.

Other grantees' commented on the question of "Why Cougars?" in the following ways:

Cougars are keystone species and play an important role in structuring communities. At least 24 other vertebrate species grab a meal from cougar kills.

Endangered and threatened species don't have a high impact on ecological health just given their low population numbers and range.

Cougars play the biggest role of any other predator in the U.S and can tell us how to manage and conserve wildlife.

2) *A coexistence umbrella (0.48)*—From a conservation perspective, the wide distribution of cougars, often in areas near people and livestock, creates a correspondingly large number of opportunities to experiment with, learn, and disseminate strategies and tactics of coexistence—strategies and tactics that potentially engender benefits for other large carnivores. In this way, a focus on coexistence between cougars and people can help establish practices that will facilitate a more peaceful expansion of grizzly bears and wolves into new areas. One grantee summed it up this way, "Cougars provide more possibilities to find workable solutions for how we can co-exist just by the fact they have a wider range and more presence on the landscape than any other carnivore... if we can learn to live with cougars than it leaves more room for us to understand and accept other species."

3) *Less symbolic baggage (0.48)*—Many interviewees commented that because cougars carry considerably less negative baggage compared to wolves and grizzly bears, it enables them greater opportunities to advance coexistence and reform state wildlife management. Both wolves and grizzly bears labor under the burden of being identified with what some people see as an oppressive federal policy—the ESA. ESA protections have also thrown into relief conflicts between federal and state governments over control of wildlife. Moreover, people perceive the presence of wolves in the West as the outcome of reintroduction efforts that some see as a conspiracy between environmentalists and the federal government. "Our culture is just not ready for wolves or grizzly bears," one interviewee stated. "Cougars can better lead the way for us to learn about living with large carnivores."

Perspectives common among researchers

4) *Research opportunities (0.17)*—One final perspective that related to research opportunities was expressed solely by researchers. Again, in common with (1) and (2) above, cougars engender many more opportunities compared to wolves and grizzly bears for learning about the ecosystem effects of predation and sport hunting because cougars occupy a much wider range of environments and management regimes. One researcher commented that "the cougar is an incredible proxy for connectivity, when it comes to protecting large tracks of land for other species."

Identified problems and threats

There were eleven problems commonly articulated by interviewees, plus several others that warrant presentation. Again, each perspective is numbered, labeled, and given a number that denotes its frequency of expression by interviewees.

Perspectives shared by advocates and researchers

Problem 1) *The nature of state wildlife management (0.74)*—Interviewees expressed nearly universal agreement that the very nature of state wildlife management was a huge obstacle to advancing cougar conservation and welfare. Although some acknowledged the historical benefits of state management, virtually all considered these institutions to be regressive, unfair, biased, and mired in the past. Interviewees discussed that advocates are essentially marginalized in decisions having to do with cougar management. Interviewees identified the reasons for this as a devotion among state managers to the culture of hunting big game, amplified by financial dependency on hunters and fishers, and reinforced by governing commissions comprised almost entirely of hunters, fishers, and livestock producers, with no representation of the conservation or animal welfare perspective. Moreover, some of the interviewees noted outright hostility on the part of hunters and agency personnel to any efforts to broaden financing

and participation to include non-consumptive stakeholders. Several described tacit or even overt threats against them personally.

Quotes from interviewees regarding this problem included:

Changing the influence of hunters on agencies is critical to long-term conservation. The public needs to have a say on how wildlife is managed.

The state and some researchers have an agenda and the science is being manipulated. This is backyard science and no one is asking any questions.

We must reform wildlife agencies or wildlife agencies and wildlife are in big trouble.

Commission system – it is not working like it is suppose to. It is a top-down system. They should not have the ability to fire a director. When they do, the directors are just puppets for the commissioners who are tied to the hunting and ranching communities. Changing the influence of hunters on agencies is critical to long-term conservation. The public needs to have a say on how wildlife is managed.

People hate trophy hunting but the power structure here is too big. The agencies and commissions have too much power. Unless this changes, there is no way

With a little protection, the species can do well. But, some of the advances that have been made, can be taken away very quickly through local and even statewide responses by authorities— mostly game commissions— in response to “threats” by carnivores, including cougars, either threats to game populations (like mule deer or bighorn sheep) or to human safety. This is why continued research and understanding of the dynamics of predation and of cougar behavior is so important.

Problem 2) A negative stance by managers toward cougars (0.61)—Related to the preceding problem, our interviewees were also in near universal agreement that managers and management are becoming increasingly hostile to cougars. One advocate tracking hunting quotas for cougars in the West cautioned that managers have increased quotas despite the advice from their own biologists. Another stressed similar concerns: “Given the strong anti-predator resurgence emerging in nearly every state, I am concerned that cougar populations will decline and no one will take notice.”

The stance among managers is reinforced by a burgeoning of hostility among sport hunters—predominantly those interested in hunting elk and deer. Deer populations in particular are declining in many parts of the West, largely due to deteriorating climate and habitat, but in the eyes of many hunters and managers, because of predation. Or at least many hunters and managers see predators such as cougars as one thing they can control out of a constellation of factors they have little or no control over, including weather, habitat, and human developments. Several interviewees further noted that this hostility had little to do with pragmatics, but was largely about an increasing demonization of predators. Most interviewees mentioned that the tide was definitely turning to a more anti predator stance, and we were or had the potential if we were not careful, to lose much of the progress that had been made in the last two decades. One grantee emphasized that while some attitudes have changed for the better inside the relevant state agency, “things have definitely gotten worse.” The interviewee lamented that their state agency was currently looking at removing all the safeguards they had set that limited the killing of females.

Two other grantee comments are worth noting:

Cougars [are] still the scapegoat here. Wildlife agencies are increasing quotas to decrease populations to provide hunting opportunities so agencies can increase their revenue base.

Where they come into bighorn habitat is where cougars get into problems. Controlling them is probably the only thing they can do but they are hammering them.

Problem 3) Lack of information about cougar ecology and populations (0.48)—Even though most interviewees thought cougar populations were in decline, many also noted that basic information on status and trends of

populations was lacking, along with information on how cougars affect prey populations and how sport hunting, in turn, affects cougar populations. One interviewee noted that information on cougar-related attitudes and behaviors was lacking—and also critical. However, lack of all this information serves the purposes of those who would like to continue over-hunting cougars, and is a predictable outcome of the lack of resources invested by state agencies in managing cougars, which they more often see as a pest than as a valued species.

Problem 4) Cougar population declines (0.43)—Again building on the problems described above, many interviewees stressed that mismanagement, over-hunting, human population growth, habitat fragmentation, road kills, and trapping are putting cougar populations at risk—in particular, through the killing of too many females. Several interviewees mentioned the paradoxical increase in cougar distribution in the eastern U.S. coincident with population declines, noting that the expansion was driven by the phenomenal dispersal ability of this species. But several who work along the eastern margin of cougar range also thought further expansion was unlikely, given heavy harvests and growing political hostility.

One researcher who had been studying cougars for nearly 20 years responded on how the state’s cougar population was faring by raising concerns other researchers shared: “We have wacked them down over the years, so it is hard to say.” Other interviewees commented that while the species is not currently listed as a federally endangered or threatened species (with exceptions in Florida and parts of Latin America), that doesn’t mean they will not eventually suffer the same fate, especially when you consider how cougars have been eliminated from most of the eastern U.S.

Other comments worth noting on this topic:

The biggest threat to cougar populations is hunting—the US kills 3,500–4,000 cougars a year.

When we hunt cougars too hard, we create more havoc and more conflict, and reduce their genetic variation.

I worry we are going back to the bounty era. Arizona reintroduced bighorn sheep in an area before doing any work, and now they want to kill cougars to protect the sheep. They want to kill 50 cougars in one area in the Catalina Mountains.

Problem 5) A public that doesn’t value cougars (or Nature) (0.35)—A number of advocates and researchers noted that the general public doesn’t sufficiently value cougars, nor are people engaged on the ethical issues the animals face, with the notable exception of how kittens are treated. Several interviewees attributed this to the fact that most members the public were unaware of how cougars were mismanaged, hunted, or trapped. One researcher said if the public knew how cougars suffered or saw how they were hunted or left in leg-hold traps, there would be an outpouring of support for protecting these animals. Along similar lines, two researchers said that it wasn’t their research that was going to advance protections for cougars, but change in public’s attitudes about the species, and appreciation for nature, both ultimately critical to the species’ future.

Problem 6) Habitat degradation (0.26)—A handful of advocates and researchers mentioned habitat degradation as a major problem, including encroachment of human developments and fragmentation by human infrastructure. When asked about threats to cougars, one researcher said solemnly: “As human population grows, loss of habitat will escalate; you combine this with overhunting, and we will lose critical populations.”

Problem 7) The expense of cougar-related work (0.22)—Another handful of interviewees mentioned the expense of studying and managing cougars as a significant problem. While they stressed the importance of the research, long-term invasive studies were becoming less appealing.

Perspectives common among advocates

Problem 8) Under-funded and under-staffed NGOs (0.39)—The interviewed advocates strongly emphasized the lack of funding and staff focused on cougar advocacy as being a serious deterrent to working on this issue. Several said that they had been forced to cut back on their cougar-related work—despite a passionate interest in it—simply for lack of funding. Several interviewees who had focused on cougar conservation for years were now turning their

attention to wolves because more foundation funding was available. A number of interviewees remarked on the lack of foundation interested in supporting cougar advocacy, with the notable exception of Summerlee (see below).

Problem 9) *Lack of attention given to cougars (0.39)*—A number of advocates also noted that cougar welfare and conservation don't get enough attention within the conservation community, among the public, or in the media. This lack of attention in these sectors is plausibly synergistic and amplified by lack of resources to support cougar advocacy as well as lack of moral resonance among the broader public (see Problems 5 and 6 above).

Problem 10) *The difficulty and discouragements of cougar advocacy (0.39)*— Many advocates mentioned the difficulties of working on cougar advocacy. The lack of funding combined with the stronghold hunters and ranchers have on agencies, fish and game commissions, and elected officials, have left some advocates discouraged. Several expressed deep disappointment and regret and that they had no choice but to turn their focus to other issues. One discouraged advocate said, “We need a broader strategy. We can't continue going in front of the game commissioners, and the legislature isn't much better.” In rural areas these sentiments were amplified because of powerful coercion that punishes researchers and advocates for not holding anti-predator sentiments.

Perspectives common among researchers

Problem 11) *Ignorance about cougars among the public and managers (0.74)*—Researchers in particular highlighted the problem that both the public and cougar managers know little about cougars. This took many forms, but included ignorance of basic cougar ecology, the state of current scientific knowledge, the nature and efficacy of coexistence options, and an unwarranted presumption that cougars were abundant and dangerous. One researcher commented that the biggest problem facing cougars was the public's lack of a “more wholesome, healthy relationship with nature.” But many of the interviewed researchers particularly stressed the egregious extent to which cougar managers did not understand cougar ecology and failed to use the best available science. Several complained that their research was being ignored by managers and commissioners and stressed the need for a neutral person or organization to ensure that the best science was understood and incorporated into management decisions and practices.

Solutions advocated

Summerlee grantees advocated thirteen solutions most frequently. Five received broad support among both advocates and researchers. Most of these solutions logically followed from the problems identified above and, given the magnitude of these problems, a number of people emphasized that “there was no silver bullet” and success would depend upon a multitude of intelligent strategies doggedly pursued over many years—if not decades.

Perspectives shared by advocates and researchers

Solution 1) *Educate the public about cougars (1.04)*—The interviewees were universal in their support for educating the public about cougars, with an emphasis on basic ecology, ecosystem effects, population status and trends, human safety, and coexistence. This solution was rooted in a widespread perception, especially among researchers, that both managers and the public were profoundly ignorant about all of these matters (see Problem 11 above).

One advocate stressed, “Outreach is critical to demystifying these animals so the public doesn't have an exaggerated view based on media reports.” Another interviewee similarly added that outreach was particularly important because the state wildlife agencies don't see it as their responsibility to inform people or correct misinformation about the cougars. “We are not going to advance conservation overnight. It is a slow process, and we need to keep the pressure on by providing a different point of view than what is presented by the hunters, fishers, and even the agencies. If we don't talk about it, then the story the consumptive users tell is the only one the public and media hear. If the public doesn't hear any counter-arguments, they will believe that cougars are dangerous, a threat to humans and livestock, and should be eliminated. If we don't tell our story, then for sure we have lost any possibility of making advances.”

Other interviewees commented:

Biggest concern is cougars' relationships with people. More development will bring more interaction with cougars. We need public awareness programs if we are going to manage this relationship. Education of developers and citizens is critical.

With the growing human population there will be a greater probability for conflict with cougars and other carnivores—not less. So consequently what can we learn today about people's position [is important for] managers and commissioners to use to inform people about these animals . . . to let them know how to co-exist.

Solution 2) Reform state wildlife management (0.52)—Mentioned as critically important to protecting the welfare and long-term survival of cougars, was another widely supported solution, but one that was recognized to be in the “very tough” category. Facets of this solution mentioned by both researchers and advocates included changing the nature and compositions of governing commissions, developing alternative funding mechanisms, and making explicit provisions for inclusion of non-consumptive stakeholders (e.g., non-hunters) in decision-making deliberations. One interviewee commented that if we don't reform wildlife agencies, not only are they at risk of losing their funding sources—they also won't have the ability to address the enormity of issues facing wildlife, leaving cougars and other species at risk.

Many shared the view expressed in this interviewee's comment: “We need to address how wildlife agencies are structured. . . . Hunters and fishers are the primary customers of state agencies, and these customers want to make sure they have a hold on decision making, and agencies want to make sure they are satisfied. These customers don't want non-consumptive users to have any power.”

Other comments along these lines included:

The North American model of wildlife management has achieved some great things in the past, but a new avenue forward needs to occur. Most important, the political appointment of commissions that oversee state wildlife management agencies needs to change. Commissioners with no previous ecology or wildlife background (other than hunting) rarely see the larger picture. Until this structure changes, biology-based management of large carnivores will struggle, which is extremely frustrating for most biologists, including agency biologists.

We need to show how incompetent the agency is in managing the public's trust. Hunters have too much of a say on how cougars are being managed. They raise the quotas based on a complaint by one rancher or hunter.

Nebraska has 22 lions at most and now has a hunting season. One local population can't be considered “recolonized.” They were extirpated in 1891 and are now coming back on their own. Now their survival is in the hands of hunters and private money. We need to raise awareness for their protection.

Solution 3) Promote ethical issues (0.43)—There was widespread support by both advocates and, surprisingly, among researchers, for the need to draw attention to the ethical aspects of how cougars are managed and perceived. This solution would entail speaking to existing ethical concerns about methods and effects of hunting, especially effects on kittens. Another solution suggested by some interviewees pertained to the responsibilities that people have to coexist with cougars, especially if they've chosen to live and recreate among them. One grantee emphasized that the public needs to know why hunting is deleterious to cougars. This solution was featured by some as an alternative to relying simply on education, or the simple transfer of information, as featured in Solution 1.

On promoting ethical issues one interviewee stated:

Yes there is a role for it. For someone who studies carnivores and recognizes that wildlife conflict and persecution of carnivores by humans is a key threat— the welfare of individuals and the ethics of how we manage and hunt them are important. It is not a science question or an ecological one— it is an ethical question. We need to be out there talking about the ethics of how we deal with these predators. I am on board with the mission; it is just not what we do as ecologists.

Solution 4) Advocate ethical hunting practices (0.43)—This solution is closely related to Solution 5, but with an emphasis on ethics rather than education, and with an audience that includes not only hunters but also the general public. Those expressing this view sought to engage a basic moral repugnance to cruel hunting practices (e.g., use of leg-hold traps and poor policing of leg-hold trapping) among a critical mass of people, including hunters, which can be activated through publicizing or raising awareness about such practices. For example, regarding cougars shot at point blank range out of a tree, one researcher commented that if the public ever saw how a cougar was hunted, they would be shocked! He said many people where he conducts his research are completely unaware that cougars are hunted for sport. Another researcher felt that science was important but that addressing the welfare of individual cougars and the ethics of how they are managed and hunted is “totally reasonable.”

On interviewees commented:

Hunting is deleterious to both cougars and ranchers. We should be talking about the effects that hunting has on cougars and their population and how hunting has exacerbated predation on livestock. Look at the Weilgus study and how hunting trophy males affects population dynamics and hunting.

Solution 5) Educate hunters, ranchers, and landowners about cougars (0.35)—This solution is closely related to Solution 1, but differs by explicitly naming an audience that is often hostile to and closely identified with killing cougars. The objectives are to cultivate an understanding of non-lethal options among this audience, and foster an appreciation for how killing cougars might actually harm their own interests (e.g., by increasing rather than decreasing depredation on livestock).

Several researchers emphasized that there is sufficient evidence of the negative effects of cougar hunting and how it can, in some circumstances, intensify predation on livestock by disrupting the cougars’ social structure. Several researchers were concerned that ranchers were not being informed of these effects and how they can actually reduce their losses if the killing of cougars is reduced or eliminated. One long-time researcher said emphatically: “We also need to dispel the myths that cougars are the major threat to elk and deer.” This solution is predicated on the power of information to transform people’s attitudes and behaviors.

Other interviewees added:

We need to look at how hunting carnivores—cougars, bears, and wolves—affects the social structure of these populations. It really hasn’t been taken into consideration. We need to be talking to the public and ranchers about these implications.

We need to educate local communities about the importance of vaccinating their dogs and informing them that the scat samples we have found in our study show that these cats’ diet is not cows. It is the one cause we can have an impact on.

We need to increase education to hunters. When some learn how killing females is bad for the population, they get it. Some have no idea that they orphan kittens, etc. We need to change attitudes one by one.

We need to work on habitat issues and begin to talk about the ethics of hunting to the public and wildlife managers.

We need to get a handle on attitudes—we need to be meeting with ranchers and farmers. This has made a difference in the effort to save the cheetah in Namibia.

Perspectives common among advocates

Solution 6) Develop (and implement) strategies for reforming state wildlife management (0.52)—This solution differs from Solution 3 by focusing on means more than ends. The advocated strategies include working with state legislators to reform the structure and funding of state wildlife agencies; using ballot initiatives to change management practices as well as funding; and maintaining a public critique of state management and, if relevant, the dubious information upon which it is based. One interviewee thought it would be worth recruiting moderate hunters to the cause of cougar conservation, partly as a means of splitting the hunting community; another advocated that

efforts be focused in states and regions where success was more likely, notably Washington, Oregon, California, and perhaps Colorado. One commented: “We now need to now manage for conservation, not elimination.”

Solution 7) Counter regressive forces and messages (0.39)— Several interviewees strongly emphasized the importance of a well-coordinated strategy to counter the negative forces that are driving the killing of cougars. Essentially, this solution focuses on mobilizing and empowering the public and NGOs to counter misinformation with effective messages that cougars are not a significant threat to people and livestock, and not the major culprit for deer and elk declines. This solution differs somewhat from the education-focused Solutions 1 and 4 by being more overtly coordinated with political action. One interviewee saw a particularly urgent need for this kind of action in areas being colonized by cougars, where anti-cougar forces are becoming increasingly mobilized. Advocacy has to get funded, one interviewee responded: “No one else is doing it. We need to hold the state agencies’ feet to the fire on how they are managing cougars.”

Solution 8) Be patient, persistent, and strategic (0.35)—Several advocates remarked, “Change won’t happen overnight.” By this they meant that given the magnitude of the challenges, changes will likely accrue only after sustained and coordinated effort among a number of cooperating funders and groups. One interviewee stressed the need for persistence and patience as well as the importance of a comprehensive, well thought-out approach: “No one strategy is a fix all.” Every effort, they stressed, “will need to be coordinated and executed to ensure sound management and conservation of cougars.”

One interviewee also noted that there was a need for new allies, with particular emphasis on the potential value of recruiting Tribes and First Nations. First Nations in particular have political clout in Canada.

Others added:

Whether their funding supports threatened, endangered, or non-listed species doesn’t matter. We need better collaboration among groups. Think globally, act locally. We need to focus on grassroots development and on common issues to build a strong constituency. This is what we need to make a difference.

Compared to other cats, they are faring better. And they are larger than most cats. We thought at one time that elephants and lions were in sufficient numbers, but look at them now. Their numbers are way down. We can’t let our guard down. It can happen rapidly. We could hit a tipping point— it is critical to monitor the species.

Solution 9) Focus education and outreach on individuals and children (0.22)—This solution is focused on strategies and tactics, in particular related to key audiences for outreach and education. Several interviewees noted the importance of focusing on children as part of an effort to influence the longer-term trajectory of culture, or even as a means of influencing parents, who then might take a more active role in cougar protection. At a finer grain, several other interviewees emphasized the value of working one-on-one with key individuals, especially those living in hot spots of existing or potential conflict with cougars.

Interviewees also suggested focusing on education in the following ways:

Here in Mexico, everyone believed there were plenty of wolves so people kept hunting and killing thousands, which eventually made them extinct. This could happen to the puma. There are no protections for pumas here. The public thinks there are plenty so they have no problem killing them. We have no idea about their population numbers. No one is studying them. We need to show the public why pumas are important

One-on-one with the public is needed. We have been able to debunk a lot of misperceptions of the public by being visible in the community.

Cougars and all carnivores are losing when it comes to public education. Currently there is an all-out war on predators in the West and I attribute this to our failure to excite and educate the public about ecology and the importance of large carnivores. As biologists, we have failed terribly here and we need to redouble efforts to educate younger generations, not just emerging biologists.

Perspectives common among researchers

Solution 10) *Purvey information to cougar managers (0.35)*—Several researchers shared outright that they were disappointed and even disturbed that the results of their years of research and hard work were often not understood or were completely ignored by the relevant wildlife agency. Some went as far as to comment that they did not feel in a position to advocate for their research at the agency level, but hoped that someone would.

Interviewees' suggestions to resolve this problem were similar—the need to have the results of their research delivered to cougar managers by outside neutral and trusted sources (i.e., credible other researchers) in ways that would lead to more sound management practices. This solution was often accompanied by the admonition that researchers need to take a more active role in persuasively delivering the results of their research to managers. One researcher suggested that funding of any future research should include a requirement that the researcher, or an outside source, must effectively relay the results to managers and the public, with the goal of ensuring that results are incorporated into future management strategies: “If we don’t convey our results, we are losing our opportunity. Research is important, but if we are not making the ties to the public and managers, then we are not doing our job.”

Other interviewees added these comments:

We need to mandate and fund projects that are collaborations with academic and agencies biologists and ensure that part of the funding goes to fund dissemination of the research results or attending workshops.

Cougars are one of the large carnivores that we need to understand. There is a temptation for us biologists to want to put more collars on animals, or cameras out there to collect more empirical data about the ecology of these animals. It’s useful, but [we already have] a lot of data out there to be synthesized and analyzed, and it is just sitting fallow in agency offices. I think [we need to be] exploiting the data we already have to feed into education campaigns.

Funding should be directed toward the application of on-the-ground practice, not just collection of data and the publication of the papers. This will entail collaborations between researchers, practitioners, and managers.

Solution 11) *Effectively use existing information in creative management designs (0.30)*—This solution emphasized the importance of compiling, synthesizing, and interpreting existing information about cougars for use in innovative management undertakings. The featured applications included development of multi-state regional cougar management plans (versus local or state plans) that capture the scale of meta-population dynamics, and implementation of adaptive management, where information is used to develop hypotheses that are tested by management actions. Several researchers stated that we “don’t need additional research; we need to compile and understand what we already know.”

Solution 12) *Ensure adequate native prey (0.17)*—A handful of interviewees stressed the importance of prey abundance and composition to long-term conservation of cougars and to reduction of conflict with ranchers. In practical terms this means having an abundance of native prey, such as deer and peccaries, in cougar habitat, along with management that reduces the vulnerability and numbers of domesticated animals. Implementing this solution requires changes in how wildlife agencies manage both predators and their prey.

Solution 13) *Protect key habitat (0.17)*—This solution addresses Problem 6 in advocating habitat protection, especially of key linkage zones and in heavily human-impacted environments, such as along the Pacific Coast and the Colorado Front Range. Several researchers stressed the importance of protecting connected wild landscapes and the important role of cougars can play as a keystone species modeling habitat connectivity.

The need for and focus of research

Research can be thought of as a key aspect of solutions, especially those that rely on the compilation and persuasive dissemination of information about cougars. Solutions 1, 4, 7, 10, and 11 all entail use of information obtained from cougar-focused research. Widely voiced perspectives on the role and appropriate topics of research were evident only among the researchers interviewed.

The need for more research

1) Ecological research is important (0.35)—Several researchers stressed the value of and need for additional field research focused on ecological problems, especially if the studies are long-term and undertaken in a systems context. For example, one grantee emphasized how critical their research is because they are currently measuring kill sites and analyzing cougar scat, which so far was proving that livestock was not a major part of the cougars' diet. "No one else is looking at this; we need to continue as our research has implications for setting more sound management practices for cougars."

Another added:

Cougars are excellent surrogate species for establishing and testing hypotheses for research on other less-well known felids. Understanding what influences their population growth, habitat use, and predation in various systems can be used in improving or establishing management and conservation plans for cougars and other felids in peril globally and where data are lacking.

2) More ecological research is not warranted (0.17)—While some argued for additional research, there was a minority of grantees who questioned the merits of more ecological research. This thesis took several forms, including that we already know a considerable amount about cougar ecology and behavior, and primarily need to apply what we know, and that field research is hugely expensive, and not an effective focus for those interested primarily in advocacy. One researcher felt that there was too much duplication of research and that having a synthesis of what we already know would be more useful.

The focus of future research

3) We need to know more about cougar ecology (0.57)—The majority of interviewed researchers emphasized the need for more research focused on cougar ecology. The emphasized topics included effects of sport hunting on cougar populations, effects of cougar predation on prey populations, drivers of human-cougar conflict, and the extent and causes of cougar depredation. These topics all pertain to key deficiencies in our understanding of phenomena related to current foci of controversy.

Other researchers stressed:

Continue to fund studies on mountain lions to better understand how they interact with humans, and work to apply that knowledge to the public and resource managers.

No one knows how many cougars there are, but we need the data because it's the first step to adequately conserving the species.

4) We need more human dimensions research (0.22)—Several researchers emphasized the need to move away from ecological research and instead focus on gaining a better understanding of people's perspectives and the factors shaping those perspectives. Those who articulated this view saw this kind of information as being particularly important to supporting effective advocacy and management. One researcher saw ecological research as being irrelevant unless public attitudes in the region changed. After decades of studying cougars, some researchers were convinced that "the entirety of managing wildlife isn't about wildlife, it is about managing people. This is part of the reason I have now included human dimensions work as part of my research." Another suggested surveying the public about their values regarding nature and wildlife, and particularly large carnivores. Another suggested, as a counter to the hunters' and fishers' financial influence, seek the public's opinion about whether they would support contributing financially to the state agencies and their management and conservation of wildlife.

This is the biggest issue going forward. We want to understand and promote wildlife— to see wildlife thrive as [human] populations grow. But how can we assist people to have a more positive wholesome, healthy relationship with nature?

5) *We need better non-invasive methods* (0.17)—Several researchers commented on the value of and need for non-invasive (e.g., DNA- or camera-based) methods for monitoring cougar populations. Such methods would help to remedy current deficiencies in information about cougar population status and trends, to the benefit of both management and advocacy. Non-invasive research was commonly mentioned as less expensive than traditional methods of catching and collaring lions, and as having considerably less impact and fewer negative consequences for individual cougars.

Summerlee funding

Three perspectives were given on why continued funding for cougars was important

1) *Summerlee's funding has made a difference and it is important for Summerlee to continue funding cougar work*—If any perspective were to be given an exclamation point, it would be this one. There was universal agreement of the importance of Summerlee's past funding of cougar work and the ongoing imperative for this support to continue. Summerlee's funding has been a mainstay for many advocates and a critical augmentation of many research projects.

In agreement, one interviewee commented:

Summerlee stands out as one of few foundations that has contributed to greater understanding of cougar ecology. In the U.S., state agencies that oversee cougar management are currently funded by hunter dollars and there is little focus or money for research to understand cougar ecology other than predation from the prey end of the equation.

2) *Summerlee is one of the few foundations funding cougar work*—The cougar advocates especially emphasized this perspective. They repeatedly noted that but for Summerlee, they would not have been able to continue their cougar-focused work, and would certainly not have been able to accomplish as much as they had. This was often accompanied by a lament from grantees that no other foundation funded cougar work or, more generally, that it was extremely difficult to find money for this endeavor. "Frankly no one else is funding cougars," one grantee noted. No other foundation has stepped into the realm that Summerlee has. Another grantee stated that it is "critical" that Summerlee continue funding cougars, because there was really no one else funding non-listed wildlife species.

One grantee put it this way:

Summerlee is important because they fund hard core activism work and general education. This is huge. And Summerlee is in it for the long haul, which is a benefit because you can't change policy and culture overnight.

They are able to bridge the gap between advocacy and science, and not many foundations do this. They see the value of research and are incredibly diversified. Other foundations take more of a narrow approach to solve these complex issues. There is no silver bullet. And it is helpful that Summerlee funds hard core advocacy. They understand the need to shift culture.

3) *Summerlee should continue funding cougar research*—Primarily the researcher interviewees voiced this perspective. However, this support for continued funding of cougar field research was accompanied by admonitions that financial support should require commitment on the part of the funded researcher to engage actively to ensure that the data results are understood by the agency and the public. Some interviewees even went so far to state that any research that is funded should adhere to the highest standards of animal welfare.

Conclusion: Importance of Summerlee's support

Summerlee has been the financial mainstay for cougar conservation. The interviews make clear that grants from the Summerlee Foundation have been absolutely critical to advancing the cause of cougar welfare and conservation in the United States, Canada, and Mexico.

The signature of Summerlee’s financial support can be found in virtually all the significant undertakings and accomplishments of cougar advocacy during the last two decades. As one grantee said: “Summerlee’s funding has been integral to conservation.” Moreover, the Foundation has provided infusions of financial support for important cougar research projects at critical junctures, including during the launch or the reporting of key results. They have also funded timely advocacy that has reduced the direct killing of cougars and ill-informed management practices.

In short, both researcher and advocate comments made it evident that no other single grant-maker has been as supportive of cougar-conservation or as influential in on-the-ground outcomes, particularly because so few donors focus on cougar issues. This makes Summerlee’s funding critical. From research to advocacy, Summerlee has funded the most critical approaches to conservation—making important conservation advances possible where there would not have been gains otherwise.

Grantees agree that cougars are important—they engender more opportunities for conservation and welfare gains compared to other large carnivores, not only because of their keystone status in ecosystems, and the unmatched extent of their distribution, but also because unlike wolves and grizzly bears, they occur in a number of states ripe for fundamental changes in how wild animals are viewed and managed. In addition, we know from public opinion and attitude surveys funded by Summerlee Foundation that cougars matter to people, are seen as the icon of the West, and improve the quality and richness of peoples’ lives. (See *Why Cougars?*)

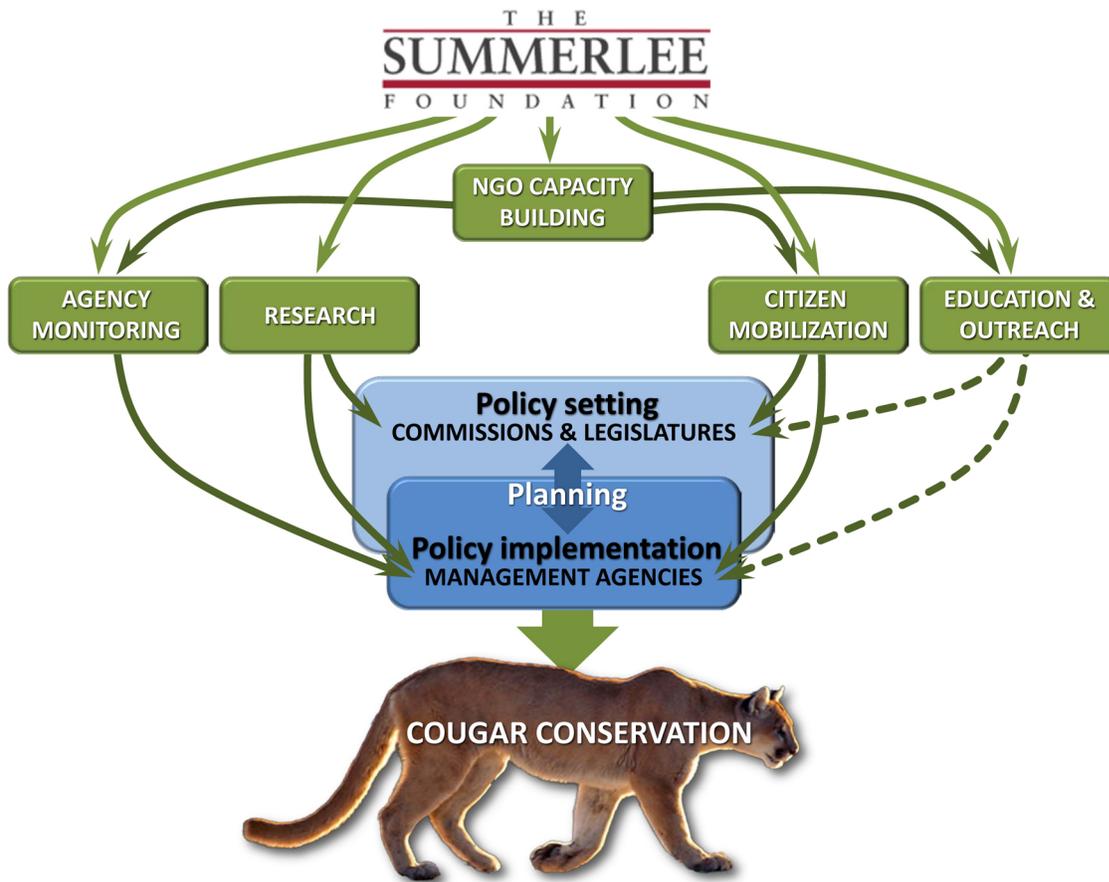
As a wedge into current state wildlife management, cougars provide more leverage for reforming wildlife practices and changing people’s perceptions and attitudes about carnivores because of their larger presence on the landscape. Some of the attributes that uniquely favor cougars in such an undertaking are the extent to which they, as top predators, throw into relief some of the most egregious and insensitive practices of state wildlife management, and the extent to which they are spared the baggage that impairs use of wolves and grizzly bears in advancing reform of state wildlife agencies.

So should Summerlee grants continue? Interviews made it abundantly clear that grants supporting work on cougar welfare and conservation are not only needed but are well justified when viewed in terms of the current and foreseeable threats mentioned in this report. Cougars have become endangered and extinct in many parts of their historic range. To ensure that current cougar populations do not face the same fate, grantees overwhelmingly agree that it is critical to be proactive.

Summerlee should be applauded for its persistence and diversified funding over an extended period of time, and given the many needs of the species, support of cougar advocacy will remain imperative, especially given that there are no indications that other foundations will be including support of cougar-related advocacy and research in their docket for the foreseeable future.

Appendix 1

25 Years of The Summerlee Foundation's Influence on Cougar Conservation





A Way Forward

Prospective strategies for cougar protection & conservation

David Mattson¹ and Sharon Negri²

20 March 2014

Executive Summary

A Way Forward presents a list of recommendations addressing the problem of ensuring sustainable populations and long-term welfare for cougars. The recommendations are a culmination of interviews of 28 grantees of the Summerlee Foundation who received funding between 1986 and 2013 for the purposes of advancing the conservation and welfare of cougars.

The interviews, conducted by Sharon Negri, Director of WildFutures, were at the request of the Summerlee Foundation to provide recommendations for setting priorities for future giving for cougars. The grantees, including both researchers and advocates, were asked their opinions about the current and emerging issues surrounding cougars, and where funding needs are greatest to ensure the long-term sustainability and protection for the species.

The grantees, including both researchers and advocates, strongly agreed that the culture and revenue structure of state wildlife management was most in need of change if outcomes for cougars are to improve. Their recommendations ranged from providing for representation of non-use and welfare perspectives on commissions, to broadening the revenue base of agencies to include non-consumptive users. They concluded that these changes were necessary so that agencies are not captive to the sole interests of hunters and ranchers. In addition, recommendations included an overall cultural change that gives due regard to welfare, co-existence, and ecosystem concerns when making policy and management decisions regarding cougars and other wildlife.

Subsidiary to changing the institution itself, strategies were recommended that can protect cougars by increasing the publics' awareness and appreciation for the species, affecting hunting quotas, especially of females, hunting and trapping methods, and policies and protocols covering depredation and human safety.

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Change requires systematic planning that draws upon the insights of people with a wealth of experience. Our listing of Strategies and Tactics outlines specific actions for advancing cougar welfare and conservation. The list is lengthy but not exhaustive.

Reforming the institution is a huge undertaking, but some highlights indicate where modest financial investments can yield substantial results:

- (1) Investment in up-front strategic planning to address the most viable strategies.
- (2) Investment in information-gathering necessary to support a decision making process that would identify the strategies most likely to improve state management agency structures, targeting states that have the most potential for success (e.g., Washington, Oregon, California, and possibly Colorado and New Mexico). A state-by-state analysis of opportunities would assess the prospective public appeal and legal tractability of different strategies and options.
- (3) Support efforts to critique the scientific basis of regressive cougar management, together with the promotion of sound science, and the Public Trust Doctrine, which is founded on the premises that wildlife is owned by no one and held in trust by the government for the benefit of present and future generations.
- (4) On the political side, engage in grassroots organizing aimed at creating a broad-based presence at public forums and in the media.
- (5) Support individuals with impeccable credentials (e.g., well-respected moderate hunters) to lobby commissions, agencies, governor's offices, and legislatures, again where warranted by specific contexts.
- (6) Create and maintain a rapid-response fund to support efforts to quickly respond to and debunk misinformation in the media, and to capitalize on incidents and good and poor policy decisions by state agencies in regards to cougars.

Beyond this focus on state management reform, other activities that could yield considerable benefits at relatively little cost are:

- (7) Promote cougar welfare and conservation needs to additional potential donors, whether foundations or individuals. Such an effort is central to broadening the financial base for improved cougar conservation, which in turn could help remedy the current lack of capacity.
- (8) Reach out in to educate residents of strategically targeted exurban areas, prone to cougar-human conflict, to yield both direct benefits in conflict reduction and indirect benefits manifest in cultural and political shift.

Remaining recommendations involve actions with local benefits for cougars in specific contexts:

- (9) Kick-start efforts to identify and promote husbandry practices that reduce the vulnerability of livestock and vulnerable wildlife populations to cougar predation, including experimental learning in collaboration with cooperative ranchers, property owners, and governments.
- (10) Collaborate with other funders to support efforts to delegitimize and defund USDA Wildlife Services.
- (11) Support presentations by authorities on cougar science in high-profile venues such as the American Museum of Natural History, the Smithsonian, and various regional zoos, to reach more influential public audiences.

Orientation: The Problem

There is little doubt about which human practices are of greatest immediate relevance to cougar conservation and welfare. Sport hunting accounts for roughly 80% of all adult cougars that die in areas where sport hunting is allowed, which is most of cougar range. Killing cougars in retaliation for killing livestock or because of human safety concerns is locally significant, for example, in California, where cougars are protected from sport hunting, or in arid portions of the Southwest, where livestock husbandry practices breed conflict. The effects of fragmentation and diminished habitat are also important in some places, most notably in heavily urbanized areas such as southern California and the Rocky Mountain Front of Colorado. In these areas motor vehicle collisions are a major cause of cougar deaths, compounding the effects of reduced reproductive rates that arise from restricted movements of adult animals.

State wildlife management agencies are pervasively and inescapably important: they set hunting quotas, establish hunting methods, set or enforce policies for depredation control, and respond to human safety concerns. Ranchers and their culture are important in some places: ranchers control husbandry practices employed with livestock and are often the voices agitating for killing cougars. In locales where urban development and highway infrastructure threaten cougars, the myriad institutions governing how and where we build homes and roads are involved. Finally, where suburban and exurban development place people and cougars close together, the perspectives of local residents are relevant because they determine whether people engage in behaviors that increase conflicts (e.g., feeding wildlife in their backyards) or agitate for wildlife agencies to kill cougars if they feel threatened.

The problem of cougar welfare and conservation is straightforward. How we treat these animals is a function of whether and how we value them. “Treatment” is essentially about whether we kill them and in what ways or, conversely, whether we are willing and able to peacefully coexist. Although there are the additional complexities, much of cougar protection and conservation can thus be thought of as reducing the rate at which we kill cougars or, if that can’t be affected, the means by which we do so.

This phenomenon of people killing cougars plays out at several scales, each amenable to different strategies of intervention and engagement. Most prominently, it is about practices such as sport harvest quotas and admissible means of harvest, including whether leg-hold trapping and hound pursuit are allowed. At the next higher scale, it is about the institutions that govern the policies and practices that kill cougars—the institutions of state wildlife management and, to a lesser extent, ranching—including features such as how these entities make decisions and how they are funded. The

highest scale involved is the overall culture, embodying norms and mores about animals and nature and playing out over long time frames. Practices are nested within institutions, and both are nested within cultures; practices are probably most amenable to change but are constrained by institutions and culture; culture is hardest to change, but has greatest long term impact.

The interviews summarized in *The Grantee's Voice*³ resoundingly support the notion that the very nature of state wildlife management is a central problem when it comes to protecting and conserving cougars; interviewees emphasized problems of state wildlife management most frequently and unambiguously of all. Almost all grantees were extremely frustrated with beating their heads against this figurative wall—a view expressed by both advocates and researchers. Efforts to conserve cougars and attend to their welfare can only succeed at the margins as long as the paradigm of state wildlife management remains unchanged. The agencies' focus on producing a "harvestable surplus" of game animals for sport hunters to kill drives most management decisions. All other considerations by agencies are peripheral, including ecosystem health and certainly animal welfare.

Assuming that reform of state management is deemed to be a priority, the most important consideration for grant-making foundations is to determine cost-effective ways to allocate limited resources. Reform of state wildlife management is a huge and complex undertaking likely to take decades of sustained effort by multiple donors, non-profits, and interested parties. And, there is a critical role for foundations to address the needs for cougars both in the short and long-term, and at multiple scales, as evident in the recommendations that follow.

³Negri, S., & D. Mattson (2014). *The Grantee's Voice: A Summary and Analysis of Interviews with Summerlee Grantees*. WildFutures, Bainbridge Island, Washington.

Strategies and Tactics

The specific strategies and tactics we recommend for advancing cougar welfare and conservation are grouped under six focal issues, within which they are in a loose priority sequence. This ranking does not necessarily imply lesser importance for items farther down on the list, nor does it take into account the goals of individual donors.

1. Reform the institution of state wildlife management

State wildlife management should be the chief focus for anyone who wants to improve conditions for cougars. As *The Grantee's Voice* makes clear, reforming state wildlife management is imperative if substantial gains are to be made for cougar welfare and conservation. Barring reform of this institution, gains will largely be limited to the margins. The elements of reform were unambiguously named by interviewees: (1) the nature and composition of commissions that govern state wildlife agencies (typically, hunters and livestock producers who answer only to the special interests of those two communities); (2) the primary sources of revenue (hunting licenses and revenues from taxes on firearms and ammunition), which reinforce a system that only caters to paying customers - the hunters and fishers; and (3) a culture devoted to the idea that the primary value of wildlife resides in opportunities for sport hunting.

Reforming the institution of state wildlife management is a huge and complex undertaking. Strategies entailed are beyond what can be covered here (see Mattson's 2013 study for a fuller treatment of the topic).⁴ Yet despite this complexity and scope, there are aspects of a reform movement that could yield considerable benefits. Efforts to change management logically occur at two scales, by directly or indirectly influencing decision makers invested with authority (commissioners, agency personnel, and judges); and by influencing decision makers who control how the institution itself is constituted (legislators and voters). The following strategies and tactics address both scales.

Embark on strategic planning for reform

Given that the reform movement is in its infancy, comprehensive strategic planning is critical. This could take the form of a workshop with knowledgeable and experienced people to help frame the elements of a comprehensive campaign-based approach.

Undertake targeted information-gathering

A successful strategic planning process that contains a thorough understanding of the key issues and specific states needs key information. There is thus a need for individuals or organizations to be assembling, organizing, and presenting information that is directly relevant to financing, potential allies, details of state management operations, and so on.

Undertake ballot initiatives to reform finances

Changing the way that agencies are financed is perhaps the most critical aspect of reform. Several organizations have already undertaken assessment of funding alternatives, which could inform the nature and content of a ballot initiative to reform financing of state wildlife management.⁵ If a ballot initiative were

⁴ Mattson, D.J. (2013). *The Problem of State Wildlife Management Institutions*. *Wild Futures*, Bainbridge Island, Washington.

⁵ Hansen, P., & J. Mosher. 1999. *Passing the Buck: A Comparison of State Fish and Wildlife Agency Funding and the Economic Value of Wildlife-Associated Recreation*. Gaithersburg, MD: The Izaak Walton League of America. McKinney, C., L. Ris, H. Rorer, & S. Williams. 2005. *Investing in Wildlife: State Wildlife Funding Campaigns*. Ann Arbor: University of Michigan, School of Natural Resources & Environment. Richie, D., & J. Holmes. 1998. *State Wildlife Diversity Program Funding: A 1998 Survey*. Washington, D.C.: International Association of Fish & Wildlife Agencies.

to be pursued in an auspicious state, the undertaking would be substantial and would require a campaign involving multiple allies, using multiple means of influence, and targeting multiple audiences. Expanding the financing streams of agencies has many benefits, including expanding their dwindling budgets and enabling them to address the complexities of issues facing cougars and other wildlife in a rapidly changing world.

Influence state management as a prelude to reform

Reforming the institution of state wildlife management will unfold over many years, if not decades. A plethora of activities must therefore occur in the meantime to influence state wildlife management as it currently stands, in order to encourage positive outcomes and minimize harm to cougars while organizing for broader reform. Influencing the state agencies (as opposed to striving for full-scale reform) requires *its own round of strategic planning* to ensure that efforts are well supported, well placed, and well-focused. At this scale the planning would logically focus on individual states, although some results for one state would probably be applicable to others.

Call the scientific legitimacy of current management into question

Decisions by state managers and commissions often are not supported by the best available science and sometimes ignore even the findings of their own personnel. This puts state managers in a vulnerable spot because they rest their authority on technical competence, including the use of science to inform management. Agency managers are thus acutely sensitive to critiques of their competence and uses of science.

There are several prospective elements to this strategy:

- *Compile and promote the latest science*: This strategy entails having credible scientists compile, interpret, and present the latest and most relevant science, with critiques of existing practices either tacit or somewhat muted. Nonetheless, this tactic can yield results—or at least get the attention of managers—as evidenced by effects of *The Cougar Management Guidelines* and the University of Chicago Press book *Cougar Ecology and Conservation*.
- *Have scientists present findings to targeted audiences*: Authoritative presentation of cougar-related science can serve as a tacit critique of cougar management activity. To carry weight, this would need to be done by a credible authority, most likely a scientist. Logical audiences would include agency commissioners, managers, and biologists.
- *Engage in ongoing public critique of agency management and its scientific basis*: This tactic would also require an authoritative voice, most likely a cougar scientist, but would focus on the media to purvey a pointed critique of the scientific basis of cougar management. Other facets of this critique would invoke ethics and empathy and could be carried by other messengers, such as cougar advocates or motivated citizens.

Create an influential counter-narrative and counter-voice

This strategy is focused less on informational influence and more on deploying affect, respect, and ethics. This difference in influential focus arises in part because this strategy often involves forming relationships with decision makers, most notably commissioners and agency managers.

- *Lobby commissioners and agency directors*: This tactic would focus on building personal relationships with these decision makers, and would involve individuals with excellent relational skills. Ideal candidates would be credentialed hunters.
- *Lobby governors and legislators*: Even though elected officials abrogate much of their authority over wildlife management under the commission system, governors and legislatures can still exercise major influences through legislation and funding. Successful lobbying depends upon building personal relationships with these politicians and would involve individuals with relational skills and political acumen.
- *Recruit allies among agency personnel*: Inside allies are always essential both in building reform from within and in providing important information to those on the outside trying to identify the best points of entry and leverage. Again, this requires the services of someone with good relational skills.
- *Mobilize informed and influential citizens*: Mobilized citizens are key to building a critical mass of people willing to give voice to perspectives held by the general public, whether at commission meetings or in the media. Public opinion polls conducted over the last decade reveal that the majority of the public supports protections for cougars, views them as the species that best represents our rich western heritage, and strongly supports the use of the best available science. Even given the bias of current state management, the consistent presence of a large number of concerned citizens voicing alternative perspectives can curb bad decision-making; it can also provide political cover for commissioners who want to make the right decision but cannot do so without legitimizing citizen testimony.

Create and manage incidents

Incidents can be important venues for critiquing existing state management in a highly public way. Some great examples of incidents and the efficacies of exploiting them occurred when managers publicly expressed their intention to kill cougars posing a “threat” to Arizonans in Sabino Canyon near Tucson and on Mt. Elden near Flagstaff.⁶ A similar incident occurred when state managers increased cougar harvests in areas where a female and her kittens had been highly visible to—and beloved by—the public near Jackson, Wyoming.⁷ Given the unpredictable nature of most incidents, preexisting or pre-positioned resources need to be available. Insofar as financing is concerned, a rapid-response fund is critical.

Undertake ballot initiatives to change management practices

Ballot initiatives have proven a useful tool in the Pacific west for changing management practices related to hunting female cougars with kittens, banning the use hounds and leg-hold traps, and ending the hunting of cougars in California. Ballot initiatives should be used as a strategy only after other efforts have been exhausted and only where there is strong public support. For such initiatives to succeed, they must be undertaken by a coalition of groups, ideally representing diverse interests. Such undertakings are expensive and require strong financial support over many years. The long-term efficacy of ballot initiatives is sometimes open to question (e.g., bans on using hounds in Washington and Oregon), but the overall effects have to be judged as salutary

⁶ Mattson, D.J., & S.G. Clark (2012). The discourses of incidents: Cougars on Mt. Elden and in Sabino Canyon, Arizona. *Policy Sciences* 45: 315-343.

⁷ Clark, T.W., & L. Munno (2005). Mountain lion management: Resolving public conflict. In *Coexisting with Large Carnivores: Lessons from Greater Yellowstone*, T.W. Clark, M.B. Rutherford, & D. Casey, eds., 71–98. Washington: Island Press.

Litigate egregious practices

In the past, litigation has provided some authoritative gains for cougar advocates to protect cougars. Several successes occurred under auspices of state laws governing environmental decisions (California Environmental Quality Act); others occurred under auspices of federal law, especially in relation to the actions of USDA Wildlife Services, which is deeply implicated in killing cougars in retaliation for depredation. Even so, this is not likely to be a common viable option, given the weaknesses of most state laws. If pursued, litigation can take substantial investments and can last for years; to work well, it also requires a media-focused strategy.

2. Increase participation in cougar advocacy by donors and NGOs

The Grantee's Voice emphasizes the lack of attention and resources given to cougar advocacy by both donors and animal and environmental advocacy organizations. This lack of capacity severely compromises progress on any of the endeavors listed in this document, and thus constitutes a foundational problem. As such, there are several self-evident measures that can be taken to begin to remedy this problem.

Support a “circuit rider” to promote cougar advocacy to donors and NGOs

“Circuit riders” would focus their attention on foundations, personal donors, and likely environmental and animal protection NGOs for the purposes of promoting the importance of cougar advocacy (see *Why Cougars?*). The riders should be well respected and well-credentialed to warrant the attention of foundations and established NGOs. The potential of this outreach is evident in the obvious gains that could be made if large organizations with substantial resources were recruited to the cause and able to mobilize their considerable membership to take action on behalf of cougars.

Develop materials that promote cougar conservation and citizen action

This undertaking is closely related to that of a circuit rider, but with a focus on the promotional materials that would not only support the circuit rider but also provide a stand-alone function to support campaigns and could be purveyed through a web portal. This document, *The Grantee's Voice*, and *Why Cougars?* are examples of materials that might serve this purpose.

3. Undertake outreach to residents in conflict-prone settings

Although conflict between people and cougars in suburban and exurban areas is not a major reason why cougars are killed or mistreated, people living at the urban-wildland interface are an important focus. This interface is often a hotbed of the conflict that does occur, much of it fueled by ignorance or inattention on the part of people working and living in or near cougar habitat. Furthermore, when voiced, the fears of exurban residents can be used by state agencies to justify higher levels of cougar sport harvest. Finally, the presence of cougars provides a reason for approaching people, with the prospect of raising awareness, increasing empathy, and mobilizing political support for cougars and other wildlife.

Support circuit riders to undertake outreach in conflict prone areas

This measure is similar to that described in strategy 2, but with a focus on residents of suburban and exurban areas frequented by cougars and on listening to people's concerns—or enthusiasm—and providing information and resources. Ideally such undertakings are conducted in collaboration with state wildlife agencies or other management entities, both to provide more resources and to garner an imprimatur of authority.

Develop targeted outreach materials

Again, this measure is much like as in strategy 2, but with a focus on residents of conflict prone areas, and with the intent of allaying fears and increasing knowledge. Cougar sightings and incidents can raise concerns among the public, especially when the media exaggerates and misrepresents cougar behavior and their relative danger to people, pets, and livestock. Materials distributed to communities on an ongoing basis, as well as immediately following incidents, would go a long way toward dispelling myths and increasing support for cougars. As noted in *The Grantee's Voice*, outreach to communities may be increasingly important as more cougar habitat is lost and fragmented due to human population growth and development.

Reach out to young people

This tactic recognizes that some adults can be resistant to direct approaches by those involved in outreach, and that children can be a means to engage or even educate their parents about cougars and their ecology, behavior, and conservation. This endeavor would logically target schools, possibly in collaboration with wildlife management agencies. A derivative longer-term benefit might also be a contribution to culture change through affecting young people's attitudes toward wild animals.

4. Promote changes in livestock husbandry

Killings of cougars in retaliation for depredation of livestock can be a major problem in certain areas, most notably the interior southwestern U.S. and adjoining Mexico. This region is typified by arid and mountainous conditions that engender husbandry practices fueling high levels of depredation. Breeding and calving typically occur year-round on unproductive rangelands where livestock are widely dispersed, leaving cows vulnerable during periods of peak calving. Compounding this, most ranchers have little economic freeboard to innovate. Overall, this is a tough problem, much like reform of state wildlife management, and any change will happen only by dint of sustained and strategic effort over many years if not decades.

Recruit conservation buyers to purchase problematic ranches

This is an action that can provide considerable short-term benefits, but it is contingent upon finding and recruiting wealthy buyers who are interested in creating a "predator-friendly" environment. Conflicts in many areas are driven by relatively few ranchers, which makes it feasible to change the local dynamics by changing ownership. However, to be effective, a change in ownership would also necessitate either tolerance of depredation or a willingness to change husbandry practices.

Promote wise husbandry under the rubric of sustainable ranching

Ranchers beleaguered by depredation are often also beset by an unfavorable economic situation. Many are interested in passing ranches on to offspring and sustaining the tradition of ranching. As such, there is the potential to engage ranchers on issues of economic reinvention and sustainability, but with the derivative benefit of reconfiguring the husbandry that drives high levels of conflict with cougars. Such a tactic requires finding the right messenger and partnering with organizations focused on promoting sustainable ranching.

Test and propagate predator-friendly husbandry practices

Even within the constraints of an arid environment, there are potential options for improving husbandry practices to reduce conflict with cougars. However, these options have only rarely been implemented, and typically not in ways that doubters might find convincing. There is therefore a need to undertake tests

in collaboration with ranchers and academics to increase the odds that results will be credible and be adopted by the ranching community. The contingencies of implementing such a tactic include finding ranchers willing to experiment, recruiting resources, and knitting participants into a consortium that will promote positive outcomes for both livestock owners and cougars.

5. Discredit and defund Wildlife Services killing programs

USDA Wildlife Services is a remarkably opaque organization, well supported by the livestock industry and historically the vanguard of predator control efforts and wildlife damage response. Discrediting it is a complicated undertaking likely to be both difficult and expensive. The best way to defang Wildlife Services is likely through reforming and restructuring the state wildlife management and ranching institutions that call on its services, but more targeted efforts would also be beneficial.

Publicize and discredit local cougar “control” efforts

Some Wildlife Services cougar-killing programs are particularly egregious, including one on-again off-again undertaking in southeastern New Mexico and a long-sustained program in Graham and Greenlee counties in Arizona. Publicizing Wildlife Service’s activities would ideally rely on affective arguments, including the invocation of ethics. It could also focus on receptive audiences—most plausibly in larger urban areas with favorable demographics.

Participate in collaborations to lobby Congress

There is also some potential gain in participating in national collaborations by environmental and animal protection groups focused on lobbying Congress to change the funding and mandate of Wildlife Services. The ideal result would be to defund Wildlife Services altogether, but such an outcome is highly unlikely. Short of that, some particularly uneconomic cougar-killing programs could be highlighted for cutting, invoking primarily an economic argument, augmented by affect and ethics.

6. Educate the general public about cougar ecology and conservation

The Grantee’s Voice places great emphasis on public education. However, for reasons articulated in Appendix III of this document, the effect of education is strongly dependent on the content, quality, and delivery. General education and outreach in the form of high-quality public presentations and video productions stand a chance of contributing to longer-term culture change, especially if the intelligence, prowess, and relatedness (e.g., maternal behaviors) of cougars are highlighted.

Empathy is a particularly potent vehicle for changing peoples’ attitudes, especially in leading them to broaden to encompass consideration of animals’ well-being and rights. As such, public education and outreach could be seen as an investment in beneficial long-term change. Some people may be excited by cougar protection and conservation issues as a result of educational outreach, but the programs have more impact if they are a component of a larger and more strategic effort. Educational materials that counter misinformation about cougar behaviors and related levels of risk can also be beneficial.

The nature and quality of the education—and the context and who delivers the information—are essential to their effectiveness and influences. However, measuring the impact of educational strategies has its challenges; if done right, it can be time consuming, expensive, and subjective. Consequently, most NGOs and agencies often forgo evaluation of their education programs.

7. Conduct research essential to conservation

The interviews summarized in *The Grantee's Voice* make clear that targeted and well-thought-out research can serve a good purpose when it is used to seed or catalyze a project that is highly relevant to protection or conservation, would not otherwise be done, and is being undertaken by a credible researcher. Often a year or two's data in hand can work miracles for leveraging additional more substantial funds (see Appendix IV). Another good investment is in supporting the reporting of relevant science by credible scientists, whether in written form or as presentations to important audiences—but necessarily as part of a broader strategic effort to advance protections for cougars (see Appendices I, II, and III). Supporting the completion and reporting of important research projects, which is commonly a neglected part of scientific undertakings, can be critical. Sometimes the timely support of an emerging young scientist who promises to make major contributions to cougar conservation and welfare can yield substantial long-term dividends. Scientific inquiry into human perspectives and attitudes can also often be a highly cost-effective investment given that data on people is typically cheaper to collect than data on cougars, and often more directly relevant to advancing conservation and protection.

Concluding observations

Despite the environmental and social policies that have benefited wildlife in the last forty years, it is clear that the current state North American Model of Wildlife Management is not adequately protect and conserve wildlife. As threats to wildlife increase in the coming years (i.e., climate change, habitat destruction, and human-and disease related fatalities), state wildlife agencies must undergo a cultural and structural shift, if they are going to maintain legitimacy and ensure wildlife is protected for future generations.

Achieving positive ways forward calls for a multidimensional approach. Conducting a strategic planning process is a critical to making wise decisions on which strategies and tactics are most effective. Careful planning will not only save precious and limited resources and time, but can also make the difference if a project or program to protect and conserve cougars is actually successful. Given the pending threats, and the state of wildlife management, we see it as imperative that strategic planning be undertaken if reform efforts are to have the greatest impact. For foundations and donors wishing to fund cougar conservation, and those considering new ways forward, the appendices 1-4 provide additional frameworks for thinking about which strategies and tactics are most appropriate and effective. Effective grant-making in support of cougar welfare and conservation requires assessment of specific proposals and their contexts, with attention to the broader priorities outlined here.

It is worth repeating that state wildlife management remains an inescapable priority because of the extent to which this institution governs the rate at which and means by which cougars are killed.

Unsustainable killing of cougars and the means people use to kill them are root problems deriving from the nature and culture of the institutions governing cougar management. Management practices, institutions, and aspects of culture all need to change if we are to ensure the long-term welfare of cougars.

Today, the existing and foreseeable range-wide threats to cougar populations require new creative responses—and call on us to develop strategies that could constitute a new model that benefits both people, cougars, and other wildlife.

Appendix I A schematic of influence

The policies and practices that directly govern the fates of cougars can be changed by influencing the perspectives of those making the official decisions, and entirely within the confines of existing culture and institutions. However, the changes that can be effected within those confines can be quite limited, in which case the focus may need to be shifted to influencing those who control the very nature of these institutions. Regardless of the scale of change being pursued, there are a fixed number of means available to effect any change, and these are intrinsically focused on influencing both public servants and private citizens who control key decisions, whether over institutions, policies, or practices.

The following schematic outlines this smorgasbord of influence modalities available to those advocating change of any sort, including improved outcomes for cougars:

- **Affective:** This approach appeals overtly to people's emotions; for example, highlighting the cruelty and non-sportsmanship of cougar hunting, the plight of orphaned kittens, or the long periods cougars and other wildlife endure in leg-hold traps.
- **Ethical:** This approach entails the invocation of morality; for example, in the case of wildlife management, the principles of fair chase and the public trust, or more broadly democracy, representation, and good governance, which touch on the current disenfranchisement of those who value cougars for intrinsic rather than instrumental reasons. The invocation of intrinsic values—and rights—is of particular resonance among animal welfare advocates.
- **Informational:** This approach involves creating, assembling, analyzing, and/or communicating information about relevant matters. To be effective, a goal needs to be identified, a relevant audience targeted, the right messenger employed, a resonant message crafted, and an appropriate venue identified. Broad-scale nonspecific informational strategies are often attractive but rarely effective in advancing advocacy of the sort being described here.
- **Critical:** This approach could be considered a type of informational strategy, but the focus is different enough to warrant describing. In particular, critiquing entails publicly disputing perspectives, practices, or policies that are considered problematic—in the case of cougars, most often those associated with state wildlife management and ranching. By contrast, informational strategies tend to be represented as more neutral.
- **Economic:** This approach entails changing people's economic (typically monetary) incentives or disincentives—in the case of cougars, most notably focused on ranchers (e.g., insurance programs for livestock losses) and wildlife managers (e.g., sources of revenues and the special interests that those sources promote).
- **Coercive:** This strategy is contingent on having direct or indirect access to power, typically embodied in the invocation or enforcement of formal laws or policies. Most commonly, animal welfare advocates have indirect access to coercion through litigation, by influencing legislators, or through ballot initiatives, all of which have the potential to redefine the coercive field.

Appendix II A schematic of strategies

Strategies are of particular relevance to those engaged in any kind of advocacy, and are a logical framework for thinking about how to deploy the different means of influence described in Appendix I. As with influence, there are well-defined strategies for effecting change, which more or less align with different societal institutions; for example, media strategies with the press, or legal strategies with the courts. Some strategies of relevance to cougar advocacy include:

- **Ballot:** This strategy is typically bent upon an authoritative outcome that provides coercive leverage, but through a ballot process that depends upon successfully influencing a majority of the electorate, often through the media. As such, ballot initiatives can entail the use of affective, ethical, informational, and critical influences.
- **Incident:** This strategy exploits the opportunity provided by an egregious act by an agency official, rancher, or hunter to gain the public's attention and, once this is gained, to critique existing policies or practices that are harmful to cougars. Incidents are often triggered by mistreatment of animals (e.g., kittens) or violation of some other public sensibility. Given the unpredictable nature of incidents, deployment of this strategy requires exceptional nimbleness and pre-positioned resources.
- **Legislative:** This strategy is focused on legislators, with the intent of changing authoritative policies governing the management and treatment of cougars. Given that states typically have authority over cougars, such strategies usually target state legislatures and rely upon informational, ethical, affective, critical, and economic influences on legislators.
- **Legal:** This strategy is focused on the courts, typically involving litigation. Legal strategies are most common in federal jurisdictions where federal laws provide ample scope for litigation, although laws in some states have allowed for legal strategies to advance cougar protection. In terms of outcomes, this is fundamentally a coercive strategy but dependent upon using information and critical thinking to persuade a judge.
- **Media:** This strategy focuses on influencing key audiences, typically of the general public, through an increasingly diverse array of media outlets. Newspapers and television were traditional foci of interest for those using this strategy, but electronic media have come to dominate during the last decade. The most common modes of influence deployed in media strategies are affective, ethical, informational, and critical, with the intent of changing the perspectives of those who might, in turn, influence managers and politicians.
- **Grassroots:** This strategy entails connecting with and mobilizing, informing, and empowering individuals at a community or grassroots level in service of a particular agenda. Most often, the purpose is related to one of the preceding strategies, including lobbying politicians, canvassing voters, or speaking up in the media. Other purposes can include local community actions in service of cougar protection.
- **Educational:** This strategy involves conveying information to targeted audiences with the intent of changing perspectives about and behaviors toward cougars. When conveying information about cougars and cougar ecology, including affective, ethical, and critical influences can be important in the context of a larger, more comprehensive strategic effort.

Appendix III Influence versus education

All the pro-cougar endeavors described under Strategy and Tactics and in *The Grantee's Voice* ultimately come down to influencing someone somewhere so as to mobilize or change perspectives, choices, or behaviors. Humans are the ultimate arbiters of cougars' fates through the measures we take to coexist with them, whether we value them intrinsically, kill them in retaliation for depredation, or hunt them for sport. We are likewise responsible for the management approaches and policies we adopt, the priority we place on cougars and their welfare, and the measures we take to ensure that their habitat is not degraded or fragmented. Influence is the ultimate medium of both advocacy and the application of scientific knowledge.

Influence can happen in many different ways. At one level, people can be affected by invoking a special interest of theirs—such as how the cougar can be served or how it might be threatened. More fundamentally, though, people can be affected by invoking basic values. The values of greatest relevance here are enlightenment (e.g., education or edification), rectitude (e.g., ethics and morality), respect (also in the form of deference), affection (e.g., empathy or loyalty), power (including elements of authority and control), and wealth (e.g., money). In other words, people can potentially be influenced through sharing factual information or invoking a shared ethic; by showing or eliciting respect, empathy, or affection; by deploying a threat of coercion through enforcement of a law or policy; or by some monetary incentive or disincentive.

Enlightenment in the form of education has sometimes proven ineffective as a means of influencing people, especially in conflicted and contested situations—where people often feel defensive and threatened. Ample research has shown that people typically use information selectively, simply to reinforce and rigidify existing standpoints. Rarely are perspectives transformed. More often, information has a transformative effect only after the deployment of other values—for example, respect, affection, or money—has created a safer psychological space within which people can relax their guard and revise how they understand the world.

With this as background, it is interesting that so many of the experts and grantees interviewed for *The Grantee's Voice* highlighted education as a means of advancing cougar welfare and conservation. From all we know of effective advocacy and human social psychology, one would expect education—the conveyance of information about cougars—to play a more circumscribed role. The ethos and power dispositions of state wildlife management will not be changed by educating the people involved. The effective lobbying of legislators or the successful execution of ballot initiatives is typically affected only diffusely by educating the public about cougars and cougar management. People who feel threatened by cougars and who live in cougar habitat will probably only open up to information about the animals if they are approached in a deferential, respectful manner. If information about cougars is to be deployed, it clearly needs to be done in the context of a targeted well-thought-out campaign that considers the identifiable interests of those being approached

It is perhaps obvious then that education in the form of information conveyed about cougars can play an important role as long as it is directed at a strategically targeted audience, is carried by an effective messenger, and contains relevant messages—all in service of a well-articulated goal. For example, there is merit in having credible scientists promote the latest peer-reviewed cougar science to wildlife management agencies, given that these agencies derive much of their public legitimacy from their claim to be “science based.” They at least need to acknowledge the science, regardless of whether it actually

drives their decisions. The *Cougar Management Guidelines* and, more recently, the University of Chicago Press book *Cougar* have had beneficial effects for precisely these reasons.

Appendix IV A role for research

Most people in our society and culture would probably agree that science provides our most reliable means of gaining insight into the material world. Researchers pride themselves on their systematic inquiries, intellectual rigor, lack of bias, and reliance on evidence for reaching conclusions about how the world might work. There is no doubt that we need to use the methods of science to gain reliable insights into cougars, their effects on ecosystems, and the effects of humans on them. As the interviewees in *The Grantee's Voice* noted, considerable uncertainty remains about a number of critical phenomena that fuel much of the current controversy and conflict over cougar conservation and protection. Key issues include: the effects of cougar predation on prey populations; the effects of sport hunting on cougar populations and public safety; the prevalence and drivers of livestock depredation by cougars; and the lack of large-scale methods for inexpensively and non-intrusively monitoring cougar populations.

Furthermore, the research required to advance our current understanding all of these phenomena needs to be undertaken over large areas, over long periods of time, tracking numerous features of the cougar's environment. Such undertakings are hugely expensive, especially when cumulatively tallied over time. For example, a series of ecological studies undertaken on and near the southern Colorado Plateau necessitated the expenditure of nearly \$1.5 million over a period of 10 years to gather data from a sufficient number of cougars in a sufficient diversity of environments to establish the basis for addressing relations between cougars and their prey. Moreover, another infusion of \$2 million from NASA was needed to integrate these data with similar data from mule deer, elk, and bighorn sheep to undertake the analysis needed to gain robust insights into larger system dynamics. This kind of funding invariably needs to be provided by government entities, as with this example. However, at the same time, most state wildlife agencies are reluctant to fund research unless it is focused on estimating or increasing the "harvestable surplus" of game animals. Hence, many scientific questions critical to cougar conservation languish.

There is no doubt that funding of research by private foundations has been fruitful and effective, and that future funding of research would continue to be so. However, cost-effective outcomes have been and will continue to be contingent on the targeted and wise use of limited resources.