

The following letter was written for Predator Defense by wildlife ecologist Rick A. Hopkins, Ph.D., co-founder and Principal of Live Oak Associates, Inc., an ecological consulting firm in San Jose, CA.

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SUBJECT: Scientific relevance of recent information regarding human cougar interactions in Oregon

To Whom It May Concern:

"No American beast has been the subject of so much loose writing or of such wild fables as the cougar."

This observation was made by a leading American outdoorsman and conservationist in the late 1800's, none other than our 26th President, Teddy Roosevelt. After reading two recent articles in the Register Guard (Cougar sighting spooks people at school, dated April 22, 2003; Blachly resident kills two more cougars in vicinity of school, dated April 23, 2003), I find it remarkable that more than 100 years and dozens of scientific studies later, we are no better off in unraveling the "loose writing" and in some cases its management than we were at the beginning of the twentieth century.

The issues confronting Oregonians regarding potential conflicts with cougars are the same issues that confront all Americans that live or recreate in cougar country. While this "issue" is generally restricted to the western U.S., recently states such as South Dakota and apparently Michigan have found the need to confront the polarized political landscape that surrounds management strategies for this large carnivore. It is for these reasons that Brooks Fahy of the Oregon based Predator Defense requested that I review the available information and respond to some of the recent controversy regarding the direction of cougar management and conservation in Oregon.

As I understand it, the state legislature is considering legislation to overturn some provisions of Measure 18, passed in 1994. It is my understanding that Measure 18 among other things prohibited the use of hounds for sport hunting cougar and bear in the state of Oregon. Opponents of this measure have on several occasions attempted to modify or overturn key provisions of the Measure. Their arguments have generally centered on the perception that cougars are increasing in the state and any restriction on management options either has or will result in increased conflicts.

Cougars usually conflict with humans in one of three ways: 1) they may limit the growth rate of ungulate populations such that human sport hunting take is negatively affected; 2) they may prey on our pets or livestock; and 3) they may pose a risk to public safety. On the other hand, human persecution and habitat destruction has resulted in the extirpation of the American lion from over half its original range in the United States.

As noted by Teddy Roosevelt at the turn of the 20th Century our relationship with this ghost cat is one based more on myth and legend than based on science and sound

logic. All too often we allow those among us with the least understanding of the ecology of the cat to capture the process and focus the debate on society's anxieties and our primeval fears of large carnivores. Thus, the crux of the debate from my perspective (and professional interest) is to what degree do modifications or outright repealing of Measure 18 improve the ability of the Oregon Department of Wildlife to "manage" cougars? My interest in responding to this debate is one of ensuring that the best available science is used to evaluate the ramifications of any decision. I do not take a position for or against Measure 18 nor the efforts to modify or overturn it.

My response to this latest round of debates is as wildlife researcher who conducted a 12-year study (1978–1989) on the ecology of the cougar in the Diablo Range just to the east of the Santa Clara Valley in California. This area is unique in that a dense population of cougars (e.g., 10 adult cougars/100 square miles) lives adjacent to a dense population of humans. For example, the nine San Francisco Bay Area counties support over 7 million people (much more than the 3.5 million people that live in all of Oregon); Santa Clara County alone (in which my study primarily occurred) supports over 2 million people.

Currently, I am a co-founder and Principal of Live Oak Associates, Inc., an ecological consulting firm in California that specializes in endangered species evaluations, wetland analysis, wildlife human conflicts and permit assistance. In addition, I have conducted several other projects on cougars over the last couple of decades including a statewide track transect for the California Department of Fish and Game (CDFG), a status review on the Yuma cougar (then a candidate species for listing under the Federal Endangered Species Act) for the Bureau of Reclamation, and assisted on a 4-year study on the ecology of the cougar in Guadalupe and Carlsbad National Parks in the mid-1980's for the National Park Service. Therefore, I feel particularly qualified to address the biological issues surrounding this current debate in Oregon.

Not only do I have a significant amount of experience with this large carnivore, but I also reside in a state that arguably has the largest cougar population (California is the 3rd largest state and supports at least 90,000 square miles of cougar habitat, much of it the best in the Nation) and clearly the largest human population (34 million people). If that is not interesting enough, we have not had a sport hunt in this state since 1972 (30 years). Depredation (pet and livestock predation) and public safety concerns result in less than 120 cougars killed each year statewide. This is a state that supports over five million cattle and one million sheep, nearly five times more cattle and sheep than Oregon.

When discussing cougar ecology and behavior, I am always reminded of Don Quixote's admonishment in *Man of La Mancha*, "Facts are the enemy of truth". One of the major concerns that opponents to Measure 18 have expressed is that cougar numbers are increasing to the point that aggressive interactions with humans are not only inevitable but also increasing. Therefore, I will focus my response to 1) the perception that cougar populations are continually increasing statewide and in the west, and 2) that an increase in off-take or harvest is necessary to retard the unabated growth of Oregon's cougar population for the expressed purpose of reducing the risk of an attack by cougars on humans.

The Always Increasing Cougar

The general "truth" that has evolved with some wildlife professionals (and perpetuated in popular press) is that cougar populations have increased over the last 2 to 3 decades throughout the west. While we would like to believe that this "truth" is the outcome of

empirically derived data, what we find to be the case is that almost no empirical evidence exists to support this position. While numbers of cougars may have increased in portions of their range over the last 2 to 3 decades, the general perception that cougars are more abundant in the western U.S. is based not on empirical data, but one based more on oral traditions and untested word models. This "myth" is usually grounded in the belief that cougar populations declined in most if not all of western states in the 1960's to such low numbers so as to be on the verge of extinction or at the very least on the precipice for much of their remaining range. Some wildlife professionals have now codified this myth to the point that few evaluate the assumptions on which this word model is based. In fact, relatively simple efforts are all that is necessary to invalidate many of the early non-scientific assertions and assumptions.

For example, in California in the early 1920's two houndsmen published estimates based on wild and demonstrably false assumptions that the California population did not exceed 600 cats. It just so happens that an average of 245 cats was being bountied annually during the 1920's and 30's in California. Clearly a population of 600 cats could not sustain a couple of decades of 45% removal. The fact that these early estimates are clearly wrong and provide no insights to historic population trends does not change the fact that they are regularly quoted by an ignorant press and those with a political ax to grind (e.g., compare these numbers to more recent higher guesstimates).

The same reliance on unsubstantiated population estimates exists in Oregon. An unscientific and just as absurdly silly estimate was generated in the 1960's in Oregon arguing that the population had dwindled to a low of 214 cats. Again, while this estimate was not based on any empirical evidence (because none existed), but one based more on our ignorance of the cat's population ecology at the time, it has gained an uncritical acceptance of a reasonable historic estimate of the cougar population in Oregon in the early 1960's. An ignorant press, politicians and, I am sad to say, some wildlife professionals (and have even been used to developed and test models to evaluate the cat's population ecology in Oregon) often quotes this "historic" estimate without any consideration or evaluation of the fact that it is just simply (and demonstrably) wrong.

Have cougar populations increased in Oregon (or any other western state) the last 2 to 3 decades? It is important to understand and accept the fact that wildlife populations normally fluctuate. In other words, it is unrealistic to believe that wildlife populations remain static for long periods of time and just as unrealistic to believe we can (or should) manage for stasis. In addition, it is just as equally important to understand that large geographic regions such as states do not support a single population of a species like the cougar, but instead they support many populations. Thus, these individual populations of cougars do not react in concert over an entire geographic region and increase or decrease simultaneously.

There really are only two studies that have been conducted to experimentally measure population response to increased mortality or perturbations (e.g., sport harvest). These researches removed 27% and 47% of the adult segment of the population and measured the response of the cougar population (e.g., growth rate). Once the harvest had been relaxed it took two years (27% removal) and 31 months (47% removal) for the populations to approximate pre-harvest levels. Clearly the harvest rates that these two populations experimentally experienced were not sustainable and a continued harvest, even at a reduced level may have driven these populations much lower than was intended or desired. Thus, the best understanding we do have of a persecuted or over-harvested population of cougars is that they are likely to recover within a few years once the harvest rate is relaxed (which supposedly happened in the 1970's). Therefore, it is

remarkable for anyone to seriously argue that a population of cougars would or could simply increase for 30 to 40 years. Even if cougars had been greatly suppressed in the 1960's in Oregon (which is doubtful), by what we now know regarding their ability to recover, they would most likely have reached or neared carrying capacity for most of the state in the late 1970's at the latest as many argue the harvest had been greatly reduced.

One of the great failings in wildlife ecology is the reliance on unsubstantiated and undocumented historical information that describe population trends. Usually when evaluated at even the most cursory level, these "historical" word models are difficult if not impossible to reconcile with the current set of empirically derived data or even other "historical" truths. Put another way, all things cannot be true. Let us examine just three "truths" that would lead one to seriously question the "depressed population" word model.

1. The ultimate size of a large predator population is generally determined by the amount of available prey. For example, the tiger, which is 3 to 6 times larger than the cougar, has home ranges in India and Sri Lanka that are several times smaller than the much smaller sized cougar. A considerable body of scientifically derived data exists to support this general truism, that the size of a predator population is ultimately determined by the amount of prey.
2. Virtually all deer and elk biologists argue that ungulate populations were at their highest levels in the 20th century during the 1950's and 1960's.
3. Current harvest levels for cougars in most western states exceed historic bounty or harvest even into the 1980's.

Simply examining these three "truths," one is more inclined (and certainly more scientifically supportable) to build a working hypothesis that cougar numbers were at relatively high levels in the 1960's due to the abundance of available prey and a low to modest harvest rate during the same period of time (when compared to the current rates for Oregon and other western states). Since the 1960's, cougar numbers have probably fluctuated (as all wildlife populations do) statewide. At any given moment, a population somewhere in the state of Oregon may be exhibiting a positive growth rate. Conversely, another population may be exhibiting a negative growth rate while populations in other portions of the state are likely static. While this model is no more "factual" than the "depressed" cougar model, it certainly conforms better to those empirical data that do exist.

Lions, Tigers and Bears Oh My

While I watched the Wizard of Oz for the millionth time with my 7-year-old daughter this last weekend, I was struck with the similarities of the unrealistic fear and anxiety of Dorothy, the Tin Man and the Scarecrow for lions, tigers and bears (oh my ? has to be said) and for the modern day Dorothy (or Tin Man or Scarecrow) that let their imagination run away with them while they live and recreate in the natural lands of the west. It turns out that Dorothy and her companions' overactive imagination was the main culprit.

Are cougars a real threat to the rural citizens of Oregon (or any other state or Canadian Province where cougars exist) or those citizens that choose to recreate in cougar

country? I think a rational and reasonable person has to simply conclude (based on empirical evidence and not arguments based on instilling fear) that quite clearly they represent almost no threat to humans. In all of North America over the last 112 years (according to the most extensive analysis on cougar attacks by Dr. Paul Beier) there are only about 100 documented cases (16 fatal attacks with 17 individuals dying of injuries inflicted by a cougar).

While a disproportionate number of these attacks have occurred over the last 30 years, this is most likely due to the substantial increase in the human population. Since 1990 (13 years), Oregon's neighbor to the north, Washington, has recorded 8 attacks (seven of those 13 years there were no attacks) and its southern neighbor (the much larger California) has recorded seven attacks (eight of the 13 years there were no attacks). Most of these attacks occurred in open space areas such as State and National Parks, National Forest (or other federal lands) with only a couple occurring near homes or RV's; and these occurred in very rural counties with rather low human populations. During this same 13-year period no verified attacks were documented in Oregon.

Hundreds of millions of recreational visitor days are logged each year in Washington, Oregon, and California and yet only 1.15 attacks have been recorded per year since 1990 in these three states (and none in Oregon) combined. This should in no way be interpreted that there will never be an attack in Oregon, simply to demonstrate that the occurrence is rare and with most rare (in this case extremely rare events) events it is impossible to predict when and where the next attack will occur.

How rare are attacks?

We are able to infer from empirical studies of cougars, that people unknowingly come in close contact (within 100 to 200 meters) with cougars tens of thousands of times a year, and yet they are not attacked. The cougar simply remains hidden or quietly moves on. Large cats in other parts of the world attack humans far more frequently than does the cougar. The most reasonable explanation is that the American lion is simply not an overly aggressive predator toward humans and they rarely view us as a threat or potential prey.

Based on the amount of time that people spend in cougar country, the risk of an attack is probably on the order of 1: 100 million or more. In just this last week, virtually all of us have mundanely exposed our children and ourselves to activities that are far riskier (on the order of 50 to several hundred times riskier) than living in or recreating in cougar country. How many parents require their children to wear helmets when they bicycle, in-line skate, skateboard, horseback ride, or ski? Yet while all of these activities are several hundred times riskier than recreating in cougar country, many parents do not bother to require their kids to wear a helmet, even though there is ample scientific evidence that the use of a helmet will substantially reduce (not eliminate) the severity of head injuries that occur while children engage in these activities. It is amazing that legislators feel compelled to concern themselves with cougar/human incidents that affect two to three people per year (one or two children at most) in all of North America.

The belief that some politicians have professed to, that increase harvest or off-take of cougars will reduce the risk of an attack, is simply not based on any scientific analysis and is logically deficient. To illustrate this point, how do you measure success of reducing an already rare event (on the order of 100 million or more to one) in a measurable way? If you reduced the cougar population in the state by 10% and assumed this meant your risk improved by 10%, you have simply shifted the odds from 1:100 million to 1:110 million. In other words, it is simply immeasurable; you would have no

way to know that you had any effect. The only way to ensure there is never again an attack is to either eradicate the cougar from the landscape entirely or forbid people from living and/or recreating in cougar country: two completely untenable proposals.

The California Experience

California is a living laboratory for evaluating management programs (or as some would suggest the lack of management options) for the cougar and changes in human/cougar conflicts. California supports more high quality cougar habitat than any other state in the country (only Texas reports more habitat but they suggest that much of the habitat in their state is of low to moderate value), a substantially higher human population (ten times that of Oregon), and we have had no sport-hunting since 1972. Fewer than 120 cougars are killed each year for preying on pets or livestock or for public safety concerns. This is about one third of the recorded kill statistics for Oregon in the last couple of years. And finally, California supports about 5 times more cattle and sheep than Oregon.

Most people seem to understand that it would be silly to compare the absolute number of fatal car accidents in California with fatal accidents in Rhode Island. The only reasonable way to make meaningful comparisons regarding accidents between states is to transform absolute numbers to a rate such as accidents per mile driven. The same is true when trying to understand the significance of human/cougar conflicts in a state. When we transform data regarding human/cougar conflicts (i.e., amount of cougar habitat for each state, size of human population and absolute number of attacks) for each of the Western States and Canadian Provinces we discover that the greatest number (absolute) of attacks should occur in California with Washington ranked #2. But in fact, the observed rate (e.g., accidents/miles driven; in this case cougar habitat/human population/attacks) results in California being ranked #10 and Washington #6. In other words, several other states and Canadian Provinces (Vancouver Island, British Columbia, Colorado, etc.) have rates of attacks that exceed those of Washington and California; states with which Oregon shares a border. And not surprisingly, due to the rarity of attacks in Oregon it falls below its predicted status.

These statistics are in fact remarkable given that a number of western politicians and lay folk regularly assail California as the poster-child for how not to manage the cougar. But when viewed in the context of the rest of North America, we find some rather interesting oddities that confound any attempt to generalize increased off-take and changes in attack statistics.

Vancouver Island (12,000 square miles and a population of 300,000 people) for instance supports a rather aggressive sport-hunting program and yet has twice the number of attacks than California. That is almost akin to reporting that Rhode Island has twice the absolute number of car accidents than California.

Thus, the examples of California with its large cougar and human population, no sport-hunting, and its fewer than predicted human/cougar conflicts compared with the smaller Vancouver Island and aggressive sport-hunting program and substantially more human/cougar conflicts leaves one with the distinct impression that no simple, unifying principle exists that explains the observed facts of human/cougar conflicts across the landscape of North America. The best advice is do not try to micro-manage cougar populations to reduce rare events; there is simply no science to support it.

Sightings of the Cougar versus Elvis

There have been a number of attempts to use index type data such as sightings of cougars by the public as a measure of population change. These types of analyses are fraught with a number of pitfalls. They are akin to tracking Elvis' whereabouts by mapping clusters of Elvis sightings. There are a number of assumptions that are invariably violated by this type of effort, not the least of which is that the majority of the sightings may well be false. While the Oregon Department of Fish and Wildlife have maintained a database of sightings, there is almost no attempt to verify these sightings. Thus, changes in "sighting data" is more a measure of changes in peoples' attitudes or anxieties related to the cougar and has almost no relevance for evaluating changes in cougar populations.

It is not uncommon for people to report sightings of cougars in the west, particularly in urban/rural areas. Many of these sightings are simply false and others are reports of cougars living in cougar country. Dr. Beier studied a population of cougars in Southern California, one of the most heavily developed areas in the state (2000 plus people/square mile). He determined that 70-90% of reports of cougars along the urban/rural interface were false sightings.

Dramatic increases in the human population in the western U.S. and the subsequent changes in development patterns have resulted in an increased edge of rural/urban development than existed just a decade ago. The human population in Oregon has increased nearly 25% in the last decade. The human population in California has increased 70% since 1970 to its present population of 34 million people. In the last decade, homebuilders have responded to the interest of the public to live in more rural settings by offering more products along the urban/rural interface. This has had the effect of dramatically increasing the boundary between development and natural areas. This yearning to get back to nature has inadvertently created an increased anxiety between people and the very nature they want to experience.

In reality, modifying Measure 18 as proposed would not reduce the risk of being attacked in Oregon, as the current risk is so small as not to be reasonably measured. Those Oregonians (and tourist) that live or recreate in cougar country expose themselves daily to many more risky activities and yet they never consider nor concern themselves with the true risk these activities pose. I encourage state legislators to make decisions based on the best available science and not on myths and legends.

I thank you for the opportunity to comment on this issue and trust you will thoughtfully and carefully consider all of the comments.

Sincerely,

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Cc: Brooks Fahy