

AFTER THE HUNT: CHALLENGES FACING CALIFORNIA'S MOUNTAIN LION POPULATION

The cougar (*Puma concolor*) is one of only two large native carnivores with viable populations across the western United States. Current cougar management focuses on sport hunting, despite a lack of scientifically defensible population estimates in most areas (Logan and Sweaner 2001). California is the only western state that prohibits sport hunting of cougars, however, according to the California Department of Fish and Game, cougar populations are believed to be declining in several regions of the state. Conservation efforts in California have focused on slowing the loss of mountain lion habitat. Habitat fragmentation results from the growth of human populations in both urban and rural areas. It isolates cougar populations by blocking corridors necessary for dispersal and genetic interchange and by reducing the size, frequency and diversity of core wilderness areas so that they become incapable of sustaining viable populations of large predators.



Very recently, some biologists have recognized the importance of reducing other human caused mortality: road kills, poaching, public safety kills, and predator control in response to depredation on pets or livestock. In the year 2000, 149 cougars were legally killed under depredation permits in California. To better focus conservation efforts on reducing the frequency of unnecessary lethal control, we analyzed 10 years (1991-2001) of state issued depredation permits that had been databased and studied previously by Steve Torres of the California Department of Fish and Game. Permits were clustered in the counties along the western slope of the Sierra Nevada mountains, North Coast and Cascades, and on the Central Coast. This analysis is guiding the Mountain Lion Foundation's conservation program in California and throughout the west.

HISTORY AND MANAGEMENT

Historically, California mountain lions were subject to the same state and federally sponsored eradication programs as the wolf, grizzly bear, and coyote. From 1907 to 1963, mountain lions were listed as a "bountied predator". During this period, 12,461 mountain lions were reported killed, an average of 215 per year. As a solitary species with a low birth-survival rate (studies show fewer than half of all cougars survive to the age of two), mountain lion populations did not readily rebound following these aggressive removal methods. When the bounty program ended, mountain lions were listed as "unprotected," and could be hunted at any time of year in any number, until their reclassification to "game mammal" in 1969. During the two subsequent hunting seasons, 118 additional lions were killed.



In 1972, a legislative moratorium, signed by Governor Ronald Reagan, halted the trophy hunting of lions and in 1990, Proposition 117, a citizen-backed initiative sponsored by the Mountain Lion Foundation, prohibited the killing of mountain lions for sport in California and provided 10 million dollars per year for preservation of deer and cougar habitat. A 4/5 vote of the legislature or another vote of the people would be required to overturn these provisions. In 1997, an initiative challenge to Proposition 117 failed.

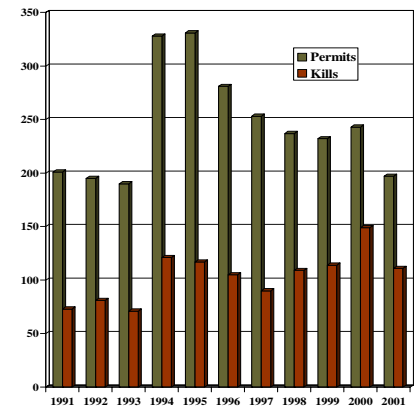
Although mountain lions are now listed as "specially protected," they are still being systematically destroyed for preying on livestock and pets. Since 1972, more than 1,600 lions have been killed in California under depredation permits. The number of permits issued for losses incurred by traditional open range livestock operations have tended to remain fairly constant. In addition to the losses expected as urban areas expand, the popularity of "ranchettes" and "hobby farm" development throughout the state has increased the level of cougar conflicts with humans, while at the same time dramatically reducing available habitat. Permits issued based on domestic pet and horse losses to mountain lions have recently tripled and doubled respectively.

While conservation biologists increasingly recognize the ecological importance of large carnivores (Terborgh et al. 1999), the management of mountain lions over most of their range continues to be dictated by hunting-driven management philosophies rather than by conservation (Torres 2001).

DEPREDATION PERMIT AND KILL TRENDS

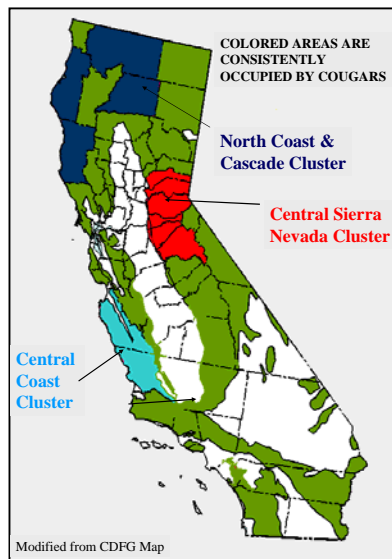
From 1972-2001 Californians, who have voted repeatedly to protect their native lion, have also requested and received 4,106 cougar depredation permits. To date, more than 1,661 mountain lions have been killed as part of this process, an average of 57 per year.

The state's depredation records show a steady increase in mountain lion deaths over the past decade. This trend spiked in the year 2000 when mountain lion deaths increased by one-quarter (149, up from 114) over the previous year. This averages out to a mountain lion being killed in California every two-and-a-half days, despite their protected status. The rise in reported incidents results from increased human development and activity in mountain lion habitat, and a lack of information on the part of new rural residents. Lions have been killed for depredation on goats, sheep, calves, chickens, and even native swans, ducks and deer, if they are considered to be "domesticated."



DEPREDATION PERMIT CLUSTERS IN CALIFORNIA

A review of depredation permits issued by California over the past 29 years point to three distinct geographic clusters where a disproportionate number of permits were requested and lions killed.



North Coast and Cascades

1,124 permits, 551 lions killed
Mendocino, Humboldt, Shasta & Siskiyou counties

Central Sierra Nevada

971 permits, 328 lions killed
Nevada, Placer, El Dorado, Amador, Calaveras & Tuolumne counties

Central Coast

302 permits, 120 lions killed
Monterey & San Luis Obispo counties

These 12 counties account for 58 percent (2,397) of all the cougar depredation permits issued since 1972, and 62 percent (1,024) of all lions killed under the process. These 12 counties accounted for 68 percent (102/149) of the lions killed during in California during 2000 and 62 percent (69/111) of those killed during 2001.

California is home to 33 million people, a number expected to nearly double within the next 50 years. The effect of this burgeoning human population on wildlife is evident. As of January 2000, more than 20 percent of California's remaining native species were classified as endangered, threatened, or of "special concern," with 140 of the animal species listed in danger of extinction.

The groundbreaking *Missing Linkages* report (www.calwild.org/pubs/reports/linkages; published Fall 2001) identified more than 200 corridors needed to prevent isolation of remaining wildlands in California. Mountain lions are a sensitive indicator of a region's loss of wilderness. Logan and Sweaner (2001) concluded that the mountain lion 1) strongly influences energy flow in ecosystems; 2) is a strong selective force on prey animals; 3) modulates prey population dynamics; 4) indirectly affects herbivory on plant communities; and 5) influences competition between herbivores. Since mountain lions require large blocks of habitat linked by corridors, they are an ideal focal species for conservation efforts.

CONSERVATION



Without intervention, the combination of managing lions by removal occurring simultaneously with the projected habitat loss and fragmentation will be lethal for the California lion. These were the causes for extirpation of the cougar in the eastern United States.

Many organizations work to ensure habitat protections in California, with a remarkable number of successful land trusts. But few groups concern themselves with limiting the number of animals killed for depredation.

In an effort to reduce the number of mountain lions killed for depredation reasons in California, the Mountain Lion Foundation has developed a program called *Living With Lions: Changing Perceptions*.

Killing a predator because of the loss of a domestic animal does very little to protect a rancher's livestock or a homeowner's pet. Some researchers have hypothesized that removing resident mountain lions may be causing more livestock losses than it is preventing. Unmitigated depredation kills cost the lives of domesticated animals and native wildlife, at substantial expense to taxpayers.

The process following a lion depredation encourages the issuance of a permit, which may not be denied by law for verified depredations. Local, state or federal agencies then proceed with the kill, with the permittee often unaware of the consequences, thinking the lion will be relocated. The permittee bears no cost for the kill. To the frustration of overworked wardens, little helpful information is readily available to the permittees about how they might avoid future depredations or encounters, and thus many permittees are repeat customers. It is these repetitions which argue for the need to mitigate initial damages through educational programs and husbandry standards, addressing the causes of the depredation, so that it will not be so likely to recur.

Our goal is to encourage Californians to use appropriate safeguards and non-lethal predator aversion methods as the accepted standards for doing business. The project's public education efforts focus on teaching the regions' "new" rural residents how to live in lion country. Many of these people, suburban or city dwellers for most of their lives, already tend to agree with basic environmental precepts, but continue urban habits in their new environment. Subsequently their pets or hobby animals are killed and depredation permits are issued.

Program staff and scientists work closely with government, credible local ranchers, agricultural groups and other organizational partners to help develop and implement workable non-lethal predator aversion options in the project's traditional rural target communities.

Foundation staff have learned as much from rural landowners as they have taught. One of the first lessons was the value of acknowledging our role as students of rural lifestyles, which increased our acceptance dramatically. We discovered, for example, that veterinarians are often the first point of community contact for new residents. We are developing a set of materials for distribution by these respected professionals. We learned that environmentalists are often the worst offenders in attracting wildlife to human communities, and have countered this with a campaign to promote an understanding that prey attracts predators, and predators may threaten safety, so a good neighbor will not feed the wildlife. We learned that many people use goats and sheep to keep down annual grasses, because they do not want to use herbicides for environmental reasons, and we have encountered cases where a lion is lost every year for preying on those goats, their owners not understanding the predator's role in the local ecology. Perhaps most important, we have learned to enjoy working alongside local residents to create barriers to predation, and we have learned to love goat ice cream.

Together with potential permittees we will demonstrate, through example, the value of behavioral changes. This can be a true "win-win" situation. Ranchers will permanently protect their livestock. Pet owners protect their pets. Dangerous attractants to predators such as feeding of native wildlife is reduced. Eventually, there will be fewer mountain lions killed unnecessarily in California by reducing the number of rural requests for depredation permits.



FOR MORE INFORMATION ON THE LIVING WITH LIONS PROGRAM:

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INDIAN VALLEY PROJECT

Surrounded by the Plumas National Forest, the traditional ranching community of Indian Valley is located 80 miles north of Lake Tahoe in California's northern Sierra Nevada Mountains. We selected this community because:

- ❖ It is undergoing the fragmentation of large acreage holdings and intrusion of ranchettes and hobby farms that many of the state's rural communities are experiencing.
- ❖ CDFG biologists have identified the region as having as high a concentration of mountain lion sightings as any comparable area on the west slope of the Sierra Nevada, the area where viable cougar populations will be most imperiled in the next decade.
- ❖ Game wardens have noted that the number of lions killed as a result of depredation in this area has increased dramatically. Indian Valley is planned to be the first of many regional demonstration projects. By incorporating the involvement of local 4H groups into the project, we are introducing non-lethal predator practices to future livestock owners and their parents.

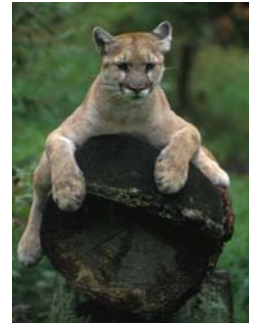


The 40 members of the local chapter of 4H which specializes in goats and sheep is participating in the demonstration project. They are constructing several "lion-proof" enclosures and exploring the use of other non-lethal predator aversions, monitoring to determine how well these methods protect domesticated livestock and discourage lions from revisiting the area. The members act as opinion leaders communicating these ideas throughout the community.

The first step was an extensive evaluation by a conservation biologist of the subject properties to determine which method or combination of non-lethal predator aversion methods would work best. In July, work parties from the local 4H Club and the Mountain Lion Foundation will build fences and pens, and exhibit the project at the county fair. Based on final monitoring reports additional measures may be implemented in 2003. A citizen advisory panel made up of ranchers, youth volunteers, California Department of Fish and Game, and the local 4H club leaders will work closely with the Mountain Lion Foundation, helping us to evaluate the success of the project and assisting in conducting the broader public education effort. Upon completion of the monitoring period, a brochure describing how to implement non-lethal predator control measures will be produced and distributed to rural Plumas County residents in anticipation of a larger statewide program.

RECOMMENDATIONS

Human caused mortality and habitat loss will continue to present the greatest hurdles to the conservation of mountain lions throughout the west. California Department of Fish and Game biologist Steve Torres (2001) offered the following recommendations for cougar conservation: 1) redefine mountain lion management in a conservation biology context that recognizes their ecological role; 2) manage for long-term viability of population systems that include predator/prey relationships rather than single species; 3) establish population monitoring and habitat models to define and maintain essential habitat; and 4) manage for ecological systems at the regional, or metapopulation, level.



Acknowledgements

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MOUNTAIN LION FOUNDATION

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