

# UC Agriculture & Natural Resources

## Proceedings of the Vertebrate Pest Conference

### Title

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### Permalink

<https://escholarship.org/uc/item/5wn3x883>

### Journal

Proceedings of the Vertebrate Pest Conference, 16(16)

### ISSN

0507-6773

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### Publication Date

1994

# TRENDS IN MOUNTAIN LION DEPREDATION AND PUBLIC SAFETY THREATS IN CALIFORNIA

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**ABSTRACT:** The mountain lion (*Felis concolor*) is widely distributed in California over at least 80,000 square miles of a variety of habitats. Trends in lion damage to property and threats to public safety have increased in recent years. The Department of Fish and Game has documented confirmed damage to property caused by lions since 1972. In 1972, there were four depredation permits issued and one mountain lion taken, while in 1993 there were 192 permits issued and 74 lions taken. Four verified incidents of mountain lions injuring humans have occurred in California since 1985. All four incidents involved children and none was fatal. Although difficult to verify, public reports of lion sightings are increasing, apparently as a result of increasing lion numbers and an expanding human population using lion habitats.

Proc. 16th Vertebr. Pest Conf. (W.S. Halverson & A.C. Crabb, Eds.) Published at Univ. of Calif., Davis. 1994.

## INTRODUCTION

The mountain lion (*Felis concolor*) is important in California, based on its ecological role as an adaptable large predator. It is also important because it has the potential to come into conflict with humans. That conflict usually is in the form of damage to property, generally livestock and domestic pets. However, since 1986, concerns for lion threats to human safety have also increased. In addition, a segment of the public views lions as competitors, since they prey on a number game species which are highly valued by hunters.

The most recently published estimates for California suggest a statewide population of at least 5,100 mountain lions (Mansfield and Weaver 1989). This estimate was developed from field studies conducted in a variety of habitats by the Department and cooperators during the late 1980s. In contrast, the 1972 statewide lion population estimate was 2,400 (Sitton). It was based primarily on review of historical records and best estimates of lion densities throughout the known range. This apparent increase in lion numbers was accompanied by substantial increases in verified damage to property caused by lions, especially during the last 10 years. Documented threats to public safety, which were rare in the 1970s and early 1980s, are now frequently reported.

## PUBLIC POLICY AND LAWS

Prior to 1907, mountain lions had no specific legal designation in California. In 1907, primarily as result of conflicts with livestock production, lions were classified by the Legislature as bountied predators. The bounty system continued until 1963, when concerns for the program's cost effectiveness caused it to be eliminated. Over the 56-year period, more than 12,500 lions were killed, an annual average of 223. From 1963 to 1969, lions were designated nongame mammals and they could be taken year around in any numbers.

In 1969, in an effort to control livestock damage and manage lions through regulated hunting, the Legislature designated the mountain lion a game mammal. The Fish and Game Commission was then authorized to set seasons and limits. In 1972, after only two years of regulated hunting, the Legislature enacted the first in a series of mountain lion hunting moratorium laws, which remained

in effect through 1985. In 1986, after intense political pressure failed to extend the moratorium, lions again were classed as game mammals under the law which was in effect prior to 1972. This status was retained until June of 1990, when the voters passed by a narrow margin an initiative which prohibited hunting of lions and designated the lion a specially protected mammal.

Despite the frequent changes in the legal status of lions, the basic procedure for regulating the take of lions causing damage to property remained fairly consistent from 1972 through 1993. Regulation changes involved altering the length of time a depredation permit was valid and prohibiting the use of snares as a method of take. Although the influence of these changes is difficult to assess, they likely resulted in only minor reductions in the take of lions confirmed to have caused damage since 1990.

The primary elements of the existing regulations related to the take of lions causing damage to property are as follows:

- 1) Department investigates reports within 48 hours;
- 2) Permits are valid for ten days;
- 3) Pursuit of offending lion must begin within one mile of damage site and cannot extend beyond ten miles;
- 4) Lions captured or killed must be reported to Department within 24 hours;
- 5) Take of a lion may be verbally authorized if it will aid in taking the offending animal;
- 6) Lions observed in the act of damaging property may be taken immediately; and
- 7) Carcasses of lions taken must be given to the Department.

The reports of mountain lion threats to human safety are more variable. This variability is the result of difficulty in verifying the reports. In general, the Department attempts to investigate each report of a real or perceived threat to humans. The evidence is often limited, and reporting parties usually lack experience with lions. Where practical, law enforcement officers are called into address threats to humans. The existing law specifically authorizes the department to take lions which are a threat to public safety. However, identifying lions

likely to threaten humans prior to an actual incident is problematic.

### DATA AND TRENDS

Since 1972, the Department has consistently recorded the number of verified incidents of mountain lions causing damage to property where a permit was issued for taking the offending animal. The number of lions killed on the depredation permits was also recorded. Figure 1 shows the trend in the number of permits issued and number of lions taken during the period 1972-1992. The annual extremes were four permits issued and one lion taken in 1972 compared to 200 permits issued in 1991 and 79 lions taken in 1992.

Summary of confirmed mountain lion depredation incidents  
1972-1993, California

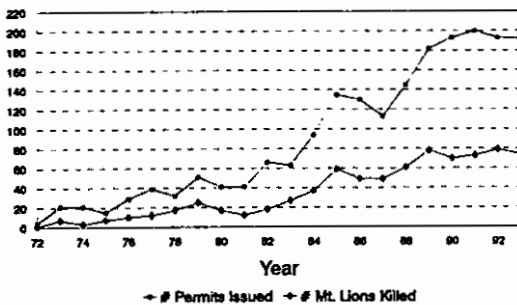


Figure 1. Trend in the number of permits issued and number of lions taken during the period 1972-1992.

In an effort to characterize mountain lion depredation activity statewide, a composite variable was developed from these data. It is a function of the mean annual number of depredation incidents and the increase in the number of incidents (regression slope) in each county. The rate of increase is important in recognizing the temporal aspect of the data. Three activity level classes were developed as follows:

Class	Mean Annual Reports	Regression Slope
High	> 3 per year	> .20
	> 1 per year	> .50
Moderate	> 3 per year	< .20
	1-3 per year	< .50
Low	0-1 per year	x

Eight of California's 58 counties are in the high activity class. They are: Calaveras, Humboldt, Kern, Mendocino, Mono, Santa Barbara, Shasta and Siskiyou. The mean annual number of incidents is relatively low for these counties, since few incidents occurred during the

first 10 years. Although biases exist in the data, the reporting procedure remained essentially the same since 1972. Our analysis suggests that the depredation reports are a useful index of statewide mountain lion activity.

The information provided by depredation reports was analyzed to determine the type of property damaged by lions. Figure 2 summarizes the trends for the period 1984-1992. There was a tendency for the proportion of pets (dogs and cats) to increase in recent years. Verifiable records of humans being injured by mountain lions in California suggest only five incidents. The first occurred in 1909 in Santa Clara County, where historic journals indicate a rabid lion injured a woman and child. No human injuries were reported between 1909 and 1986.

Prey Items Taken by Mountain Lions  
1984-1992

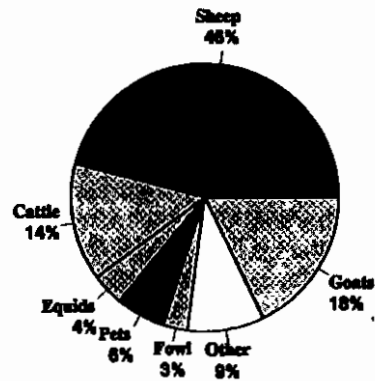


Figure 2. Summary of trends for the period 1984-1992.

In 1986, two incidents were verified in Orange County at the same regional park. In March, a five-year-old girl was seriously injured, and in October of that year, a six-year-old boy received minor injuries, as results of mountain lion attacks.

In March 1992, a nine-year-old boy received minor injuries when he was attacked by a mountain lion in a state park in Santa Barbara County.

In September 1993, a 10-year-old girl was attacked by a mountain lion and received minor injuries in a state park in San Diego County.

In response to concerns for public safety, and with experience from other states, the Department prepared a brochure, "Living with California Mountain Lions," in 1992. This informational item is written in clear, concise language and contains the basics on mountain lion natural history, potential threats to public safety and suggestions for responding to encounters with mountain lions. It was widely distributed to the public, other agencies, and property owners in lion habitat.

Although mountain lion attacks occur infrequently, the potential threat to public safety needs to be recognized. In California, the increase in conflicts with humans is expected to continue. Although the existing laws authorize the Department to kill any mountain perceived to be a threat to public safety, it places specific restrictions on

mountain management. Those restrictions limit the ability to experiment with lion populations in an effort to reduce the potential for conflict. Increased public awareness and more flexible management programs offer the best options for minimizing conflicts.

#### CONCLUSION

California has a large and widely distributed mountain lion population. It also has a large and rapidly expanding human population that is living, working, and recreating in lion habitat. The potential for conflicts between mountain lions and humans is increasing. Complex socio-

political actions to restrict management options for mountain lions has limited, and will likely continue to limit, future efforts to reduce conflicts.

#### LITERATURE CITED

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