

## Unique Study to Examine Cougars, Deer, Sheep—and People

A first-of-its-kind study of mountain lions and their interactions with deer, bighorn sheep and humans is underway in the Peninsular Ranges of Southern California, a vast study area that includes two state parks.

Walter Boyce, codirector of the Wildlife Health Center at the UC Davis School of Veterinary Medicine, is coordinating the study, which examines the relationship between lions and deer, lions and bighorn sheep, and lions and people—the goal is to formulate recommendations that ensure human safety and the management of the deer, bighorn sheep and lion populations.

The study is being conducted by researchers from UC Davis in conjunction with the California Department of Parks and Recreation, the California Department of Fish and Game and the Zoological Society of San Diego.

The study area stretches about 100 miles, from I-10 near Palm Springs to the Mexican border south of I-8. The initial focus will be in 30,000 acres of Cuyamaca Rancho State Park, and later will expand to the 600,000 acres of Anza-Borrego Desert State Park.

As part of the study, which will last a minimum of three years, cougars and deer are being captured and affixed with radio collars that will help scientists keep track of their travels and, in the case of deer, learn if they have fallen prey to lions. Bighorn sheep in the area already are affixed with radio collars, and more will be collared in the near future.

Previous studies have examined relationships between lions and other mammals, including humans, but this is the first study to examine the complex interactions of all these species.

“Solid scientific information is the key to striking a balance between the needs of wildlife and people,” says Dr. Boyce. “Southern California, with its diverse wildlife and rapidly expanding human population, is the ideal spot to look for answers for how people and wildlife can co-exist.”

The study includes several goals:

- Evaluating the lion population health and genetic composition.

- Estimating mountain lion population size, home ranges and seasonal movements.
- Quantifying lion predation rates on deer and bighorn sheep.
- Identifying activity patterns of lions in relation to people, deer and bighorn sheep.
- Investigating lion-human interactions.
- Using the data compiled to develop and test hypotheses and formulate management recommendations.

Human-lion interactions will be studied primarily in the Cuyamaca Rancho State Park region, a popular area for camping, hiking, mountain biking and horseback riding. Since most of these activities take place on established trails or campgrounds, a variety of methods (such as infrared motion sensors, 35 mm cameras, surveys and observations) will be used to document and evaluate lion activity and behavior near areas of concentrated human activity.

Over the past several years, there have been a number of human-lion encounters in the area—one resulted in the death of a woman in Cuyamaca Rancho State Park in 1994. A number of lions have been destroyed for public safety reasons resulting from incidents involving humans.

“We feel this is a very important study,” says James Burke, park superintendent for Cuyamaca Rancho State Park. “We hope the knowledge gathered from it will enable us to make better management decisions when it comes to protecting both mountain lions and park visitors.”

Officials believe the factors most likely responsible for the encounters include the presence of a large deer population—prey for the lions; a relatively large number of lions; and increasing human recreation in the area. As recreation increases, officials believe that the incidence of encounters with lions also will increase.

Steven Torres, senior wildlife biologist for the Department of Fish and



Mountain lions have been shown to be the primary threat to bighorn sheep in the Peninsular Ranges, where the sheep are listed as a federally endangered species.

Game and the coordinator of the department's bighorn sheep and mountain lion programs, says the study results could have important implications for California in the 21st century. “The study area appears to have lions in higher densities than we've seen elsewhere,” Torres says. “When you combine that with the unusually high number of human-lion encounters that have been documented there, it makes for a rather unique situation.

“But as more and more people move into mountain-lion habitat, we would expect to see increased lion-human encounters in other areas of the state,” he says. “For that reason, the data we're gathering here will have applications elsewhere.”

Bighorn sheep in the Peninsular Ranges are currently listed as federally endangered. Project collaborators have determined that mountain lions are the primary threat to the bighorn sheep there. From 1992 to 1998, lions were responsible for 69 percent of all deaths among radio-collared Peninsular bighorn sheep. Substantial new research will be conducted on the bighorn sheep and their relationship to mountain lions by Esther Rubin, a Millennium Fellow at the Zoological Society of San Diego.

The study is being funded by California State Parks, the California Dept. of Fish and Game, the UC Davis Wildlife Health Center and the Zoological Society of San Diego. Financial support for subsequent study will be sought from public and private sources.