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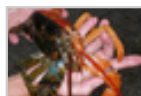
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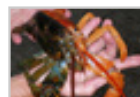
Chad Cohen and Andrew Paterson
[National Geographic Today](#)

May 21, 2003

In the rugged Santa Monica Mountains, less than 20 miles (32 kilometers) from downtown Los Angeles, at least two mountain lions inhabit 250 square miles (650 square kilometers) of protected land in a narrow strip between the 101 freeway and the Pacific Ocean.

Park officials know there are at least two because that's how many Seth Riley and Eric York, biologists with the National Park Service, have collared with satellite tags—a male and a female that they captured last year and known as P1 and P2.

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The researchers want to determine whether this slice of the Santa Monica Mountains can sustain a healthy population of the lions, which are also called pumas, catamounts, and cougars.

They believe they already know the answer.

"A population of five to ten animals is not going to make it in the long run for all kinds of demographic and potentially genetic reasons ... you have to have connections to other populations," says Riley.

The mountain lions will perish unless they can travel more widely—and connect with other lions to renew the breed.

Now it seems the lions' survival could depend on their ability to cross the 101 freeway via the establishment of a so-called linkage, or wildlife corridor, at Liberty Canyon.

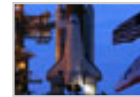
Ecologists have classified Liberty Canyon as one of 15 critical biological linkage sites—basically a designated swath of land where all animals can safely travel from one wildland to another without having to negotiate major highways or heavily urbanized regions.



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Eric York, a National Park Service wildlife biologist captured this male mountain lion, called P1, near Point Mugu in the Santa Monica Mountains. York and a team of biologists took measurements, affixed ear tags and a GPS radio collar, and released the lion on July 19, 2002. The biologists continue to follow its movements.

Photograph courtesy Scott Story/NPS

The mountain lion study is part of a much larger program called the South Coast Missing Linkages Project, which is sponsored by major public and private groups. The South Coast Wildlands Project (SCWP) wants to build the wildlife equivalent of interstate highways.

Routing Mountain Lions With Linkages

"Our ultimate goal is to have a whole system, a network of wildlands that spans the entire eco-region, all of Southern California," says Kristeen Penrod, executive director of SCWP.

Two hundred land managers and conservation ecologists gathered at the Missing Linkages conference in San Diego in November 2000, and identified about 70 wildlife corridors in California's South Coast Ecoregion—an area flanked by Santa Barbara in the North, the Californian Baja in the south, the Peninsula ranges in the east, and Pacific Ocean in the west. They designated 15 sites as critical—these lands are important for preserving biological diversity and are vulnerable to urbanization.

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Struggling to Link Lands for Cougars in California

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The South Coast ecoregion is a hot spot for biodiversity in the United States—it is also considered the most threatened.

For mountain lions in the Santa Monica Mountains a single underpass at Liberty Canyon is the lions' best chance to cross the 101 freeway for many miles in either direction. It is the only area with undeveloped wildlands on both sides—the Santa Monica Mountains on the south side of the freeway and the Simi Hills wildlands on the north.

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The canyon causes the land to dip slightly providing a hundred-foot (30-meter) stretch where the 101 rises more than eight feet (2.5 meters) above the ground and offers sheltered passage across.

But the nearest core population of mountain lions is in Los Padres National Forest, more than 22 miles (35 kilometers) away from the Santa Monica Hills. To provide a safe route all the way there would require several other linkages via the Santa Susana Mountains.

"The truth is it would have been nice if [the linkages were] 30 yrs ago, because a lot of the development along the freeway [101] has already happened," says Riley. "There are actually precious few places unfortunately that are left where we can try to maintain some connection."

Lions Study Freeway, Researchers Encouraged by Successful Corridors

The Liberty Canyon underpass is just about a hundred feet (30 meters) long. It seems a long shot that the mountain lions would use this bridge.

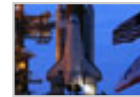
But late last year, according to the satellite tracking data, P2 sat on a hillside overlooking the 101 freeway for about three hours. She would have seen the freeway, the green grass on the other side, and just maybe a way across.



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Photograph courtesy Scott Story/NPS

Ideally the mountain lions would use the Liberty Canyon underpass to travel in and out of the Santa Monica Mountains, but so far the biologist have not seen this happen.

Throughout the Santa Monica Mountain Recreational Area, Riley and York have about 20 traps to capture other mountain lions for tag and release.

A successful example of a wilderness corridor can be seen not far from San Diego, on the eight-lane 91 freeway—Coal Canyon is a model for getting animals from point A to B.

"[Coal Canyon] used to be asphalt, this whole area used to be an underpass," says Penrod. "I mean people would exit the freeway and come under here." More than a thousand homes along with gas stations and restaurants were slated for development at the Coal Canyon exit. But those plans were abolished when scientists realized that a mountain lion they had been tracking, called M6, was using the underpass to cross the freeway and move between suitable parts of his habitat.

The underpass is now a wildlife corridor for mountain lions and many other animals and is currently being restored to its natural state.

Isolated Reserves, Sick Panthers

Now other sites are being watched closely too.

At the Santa Margarita Ecological Reserve, a seven square mile (18 square kilometer) link between the Palomar and Santa Ana Mountains, remote cameras track the movements of coyotes and birds and audio sensors detect bats.

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"Wilderness corridors are necessary because we live in a human dominated landscape," says Paul Beier, a conservation ecologist at the Northern Arizona University in Flagstaff. "Although we have conserved significant areas, even the largest parks are too small to maintain independent populations of large carnivores like pumas, wolves, and grizzlies."

For example, the Grand Canyon National Park can hold about 20 mountain lions but if the park was isolated, that would spell extinction for those animals, Beier explains.

Researchers have found that isolated parks and nature reserves function like islands. Without animals coming in and out, animals inbreed—causing the gene pool to stagnate. The small, inbred population is more susceptible to decline via disease and natural disaster.

In Florida, for example, mountain lions, or panthers as they are known locally, became isolated over the last century till less than 50 breeding pairs remained.

"The population was very susceptible to infection—many panthers had heart defects and some males were sterile," says Beier. The situation has gotten healthier since 1995, when a small group of animals, introduced from Texas, invigorated the Florida population.

In the Santa Monica Mountains researchers feel the pressure to move fast.

"It's not too late now but we, in Southern California, we have probably about ten years to secure these landscape level connections or they will be gone, and

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it will probably be forever," says Penrod.

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