

Photo by Jeff Parker/Explore in Focus.com



Studies show that apex predators, such as mountain lions, play a role in preserving biodiversity through top-down regulation of other species.





STUDYING THE LIONS OF WEST TEXAS

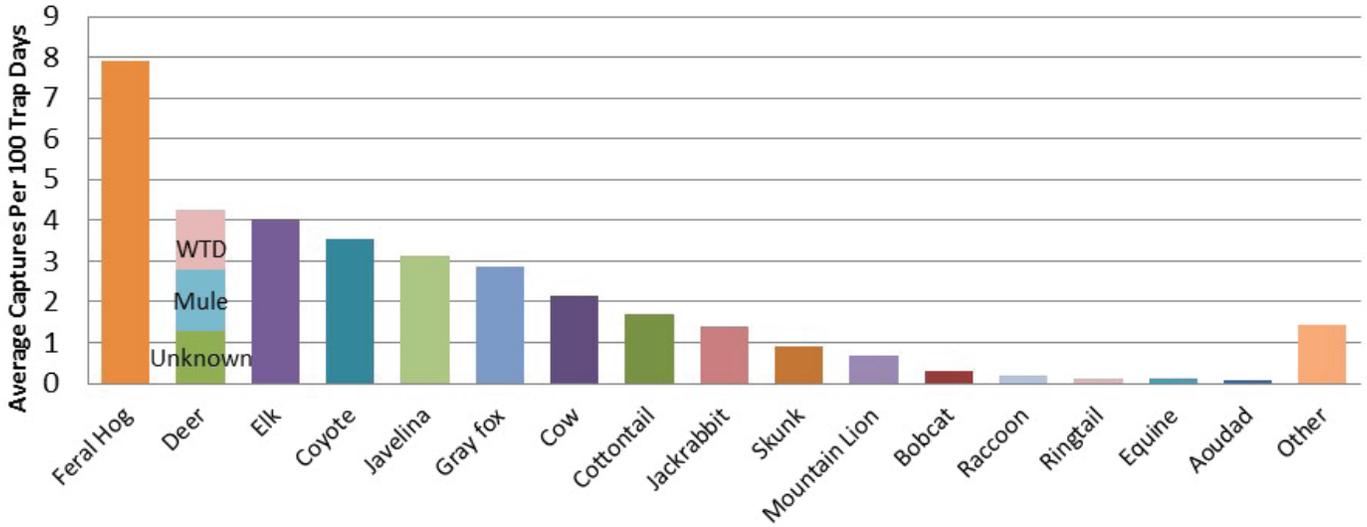
Article by MARY O. PARKER

Humans have long been fascinated by Texas' largest felines. Ancient rock art in Seminole Canyon State Park provides glimpses into this allure. There, in the park's Panther Cave, rock art estimated to have been created in 7,000 B.C. tells of a unique relationship between mountain lions and man. Drawings depict interactions between the felines and medicine men, while other images show humans donning cat-like ears.

We don't know what those ancient artists called the cats, but these days *Puma concolor* goes by many names—cougar, panther, puma, painter and, especially in Texas, mountain lion. No matter what you call them, we're still just as interested in them today as were those prehistoric people long ago. Now, however, we use cameras and GPS technology to document both the mountain lions' world and our own.

Two modern-day researchers, TWA members Dr. Patricia Moody Harveson and Dr. Louis Harveson, director of Sul Ross State University's Borderlands Research Institute, have been fascinated by the felines for years. In 2011, they began what's casually known as *The Davis Mountains Study*. The project, generously funded by private donors, focuses on mountain lion ecology and predator-prey dynamics on private lands within the Davis Mountains.





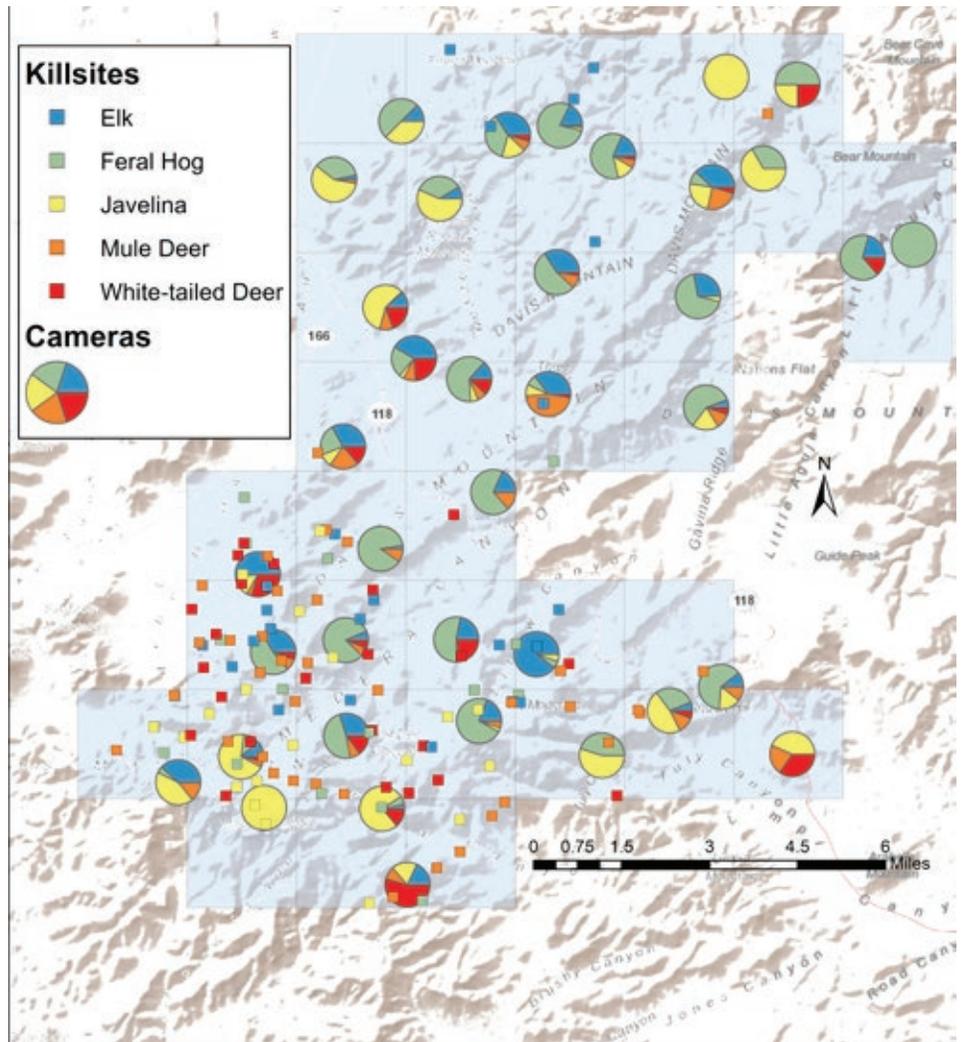
Of 27 species captured by Davis Mountains game cameras, feral hogs appeared twice as often as deer which were the second most abundant species photographed. (Courtesy of Borderlands Research Institute)

But, following a 2012 mountain lion attack on a 6-year-old boy visiting Big Bend, the Harvesons extended that study so that it's now also taking a look at the lions of Big Bend National Park. The child sustained non-life-threatening injuries when an emaciated mountain lion confronted him. Ultimately, the young cat—starving and desperate due to intestinal ulcerations and severe drought—was located and killed. While such occurrences are extremely rare, it prompted the Harvesons and the folks at Big Bend to determine what could be done to prevent another one.

Raymond Skiles, a wildlife biologist for Big Bend National Park, explained, “We have a long-standing relationship with the folks at Borderlands Research Institute, and I knew about the work the Harvesons were doing in the Davis Mountains. I described some of the needs we had, and they provided a proposal to help us meet those needs and also a way to connect the Davis Mountains study to a Big Bend study.”

One of those needs was to determine if visitor use patterns might bring humans and lions inadvertently into contact.

“We wondered, ‘Are the cats using natural movement corridors and travel patterns? Or does the network of hiking trails, campsites and the humans that use them influence or intersect with the cats’ travel patterns in a way that might



This graphic shows the distribution of the top five prey species and kill sites at Davis Mountains’ camera locations. (Courtesy of Borderlands Research Institute)





Courtesy of Borderlands Research Institute

In Big Bend National Park, mountain lions live in both the high Chisos Mountains and the desert lowlands. In the deserts, the cats prey largely on javelinas.

contribute to lion-human interaction?” Skiles asked.

Ultimately, the enlarged study—slated to run at least another three years—will provide the most comprehensive look ever into how West Texas pumas relate to prey, their habitat and one another. Already the researchers know that populations in Big Bend National Park and those in the Davis Mountains exhibit distinct differences in population characteristics and prey availability. They also encounter very different land management styles.

Of mortalities documented so far, predator control accounted for 78 percent of them. “Call it low survival rate or high mortality rate, either way, the study has shown that only 54 percent of the lions studied in the Davis Mountains survive annually,” Moody Harveson said.

With such a high mortality rate, how does the population remain viable?

“We suspect immigration,” she said. “We’re not certain where they’re coming from, but we suspect that cats coming in from Mexico are sustaining this population. We’re lucky we don’t have a border fence.”

But, international borders notwithstanding, within the Trans-Pecos the felines face significant barriers to movement. Besides contending with Interstate 10, highways and human development, on average, each cat will

cross 25 or more privately owned chunks of land.

“One of the things we’re looking at is connectivity between the mountain ranges—these sky islands,” Moody Harveson added. (Sky islands are isolated mountains surrounded by dissimilar lowland environments.)

In addition to collared lions, game cameras provide peeks into the lives of these secretive mammals.

“With video cameras, we’ve learned from our study and others that mountain lions are much more social than we ever thought,” Moody Harveson said.



Courtesy of Borderlands Research Institute

Mountain lions in the Davis Mountains have a very low annual survival rate at only 54 percent.

With Moody Harveson as her adviser, Sul Ross graduate student and TWA member Sky Stevens oversaw the placement and monitoring of cameras within the national park.

“There, we’d catch males and females together in the same camera capture,” Stevens said. “And, one of our collared lions, an older female, would meet up with a collared male.”

Such observations underscore the importance of preserving stable social structures within puma populations in order to minimize human-lion conflict. Research in western states has shown that high harvest rates can have unintended consequences by altering a population’s age structure.

Moody Harveson explained: “Recent studies have shown that social structure is important. The lion population somewhat regulates itself. You have fewer problems with depredation and other human conflict when you let the lions work things out themselves. When you create a void, it will be filled with mainly dispersing sub-adults, juveniles that are ready to leave home and establish their own home ranges.

Whereas when you maintain a stable social structure and allow the older adult toms to maintain their territory, you’re going to have fewer problems. This doesn’t mean that there aren’t times when you have to intervene. And understanding how humans and lions use the national park is





Courtesy of Borderlands Research Institute

Wildlife biologists examine an adult female mountain lion during an ongoing study about the cats.

one focus of our research which can help us identify these areas of potential conflict.”

Compensatory immigration, the term for such behavior, is typical of many low-density territorial carnivores. And, like juveniles of several species, sub-adult mountain lions tend to act impulsively and less predictably. They haven’t yet learned what to fear or the benefits of moderation.

The use of game cameras revealed additional surprises.

“In the Davis Mountains, there were so many more feral hogs than we expected,” Moody Harveson said. “Feral hogs were by far the most abundant and widespread animal photographed.

“But,” she added, “We also found that lions are eating the feral hogs. That they make up about 9 percent of their diets.” Apart from humans, as apex predators, mountain lions serve as the feral hogs’ only threat.

Feral hogs, on the other hand, pose a widespread threat to native vegetative communities and native wildlife. A 2010 study conducted by Jennifer Elston and TWA member Dave Hewitt noted that, because of a high capacity for efficient digestion and a tendency to displace other species from foraging patches, non-native hogs can outcompete other wildlife. White-tailed deer, in particular, typically retreat when confronted by the wild boars.

In Big Bend National Park, hog sightings remain rare.

“They show up here at times, but it hasn’t been much of an issue for several years,” Skiles said. “To hear that they’re finding so many in the Davis Mountains is ominous for the national park. Feral hogs could be one of the biggest threats to the native wildlife and the park ecosystems. That’s why it’s really important to have relationships with our neighbors beyond the park’s boundaries so we can understand what is arriving on our doorstep.”

Stevens’ park-based cameras captured no feral hogs, but they did snap plenty of images of mountain lions, black bears, deer (white-tailed and mule), javelinas and mesopredators including the rare long-tailed weasel.

“We placed the cameras where we suspected we’d catch mountain lions, as well as their prey. Places the cats tend to go are washes, canyons, near springs and spots where game trails come together,” Stevens said. “It took awhile to find all the locations. That was a big job!”

Stevens set out 58 game cameras using a grid system across 450 square kilometers.

“I wanted to look at where the lions were spatially distributed, elevation, vegetation and terrain ruggedness,” she explained. Stevens, who will soon receive her master’s degree in wildlife management, is still crunching data, but she did share that she observed an age structure in the park that included some older cats.

“Could be because they’re not hunting them. A heavily hunted population tends to be a younger population,” she said.

Findings from Stevens’ cameras in addition to that obtained from collared cats inside the park, demonstrated that the animals use Big Bend’s high mountains and its low desert region equally while avoiding areas of highest human presence. While they favor certain habitat characteristics inherent to the high Chisos—due to lots of places to hunt and hide—Stevens and cohorts also found plenty of pumas living in the low desert where they dined readily on javelina.

Stevens shared another surprising finding: “We usually think of these animals as nocturnal, and it’s true that most of their activity is at night, but I got footage of a cat every single hour of the day. I even have videos of cats moving at noon in the summer when it’s hot.”

And, since the days of documenting your world with rock art passed long ago, Stevens suggests that you keep your camera ready.

“When hiking those low desert trails; you’ve got a chance to see a lion every hour of the day,” Stevens said. 📷

