

# U Arizona Wild Cat Research Center to study jaguar presence in the Southwest

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The rosettes on a jaguar's fur are as unique as a fingerprint, allowing researchers to identify individual animals. Credit: Fred Hood/FelidFoto.com

The recent sighting of an adult male jaguar in Cochise County in southeastern Arizona came as a reminder that even though the big spotted cat usually is associated with dense rainforests in central and southern America, it has been known to occasionally wander the dry mountain ranges of the American Southwest.

But virtually nothing is known about where exactly the northern jaguars roam, how many of them live in this area and how they are related to the core populations further south.

To help [wildlife managers](#) and stakeholders to get a better picture and

aid conservation efforts, the U.S. [Fish and Wildlife Service](#), or USFWS, has awarded \$771,000 distributed over three years to the University of Arizona's Wild Cat Research and Conservation Center, which is based in the School of Natural Resources and the Environment at the College of Agriculture and Life Sciences. The funds were made available to USFWS from the [Department of Homeland Security](#) as mitigation for the effects of border-related activity.

The grant provides funding to assess the presence of northern jaguars and other wildlife and to monitor populations using motion-activated cameras.

"Because there was stiff competition from other entities, this grant is a significant win for the UA and the Wild Cat Research and Conservation Center," said Lisa Haynes, the center's coordinator who manages the [jaguar](#) project.

The study area extends from the Baboquivari Mountains in southeastern Arizona to the Animas Mountains in southwestern New Mexico, between Interstate 10 and the U.S.-Mexico border.

Haynes said the purpose of the study is to establish a non-invasive system for detecting and monitoring jaguars, which will aid management and conservation efforts.

"The project is entirely non-invasive," she said. "No jaguars or any other wildlife will be captured, radio-collared, baited, or harassed in any way."

Motion-activated cameras will passively monitor wildlife activity in the area. In addition, droppings, also called scat, will be collected in the field by team members or with the help of a specially trained scat-detection dog.

Large carnivore scats will be sent for genetic analysis in the lab of Melanie Culver, who is the project's principal investigator and a conservation geneticist with the UA's School of Natural Resources and the Environment and the U.S. Geological Survey. The lab tests will enable the scientists to verify species and possibly identify unique individuals.

"In addition to the possibility of detecting jaguars, we will gain a huge amount of knowledge of other wildlife in this region with thousands of photos," Haynes said.

According to Haynes, the monitoring project's main goal is to provide information about jaguar presence, which is critically needed for conservation purposes but is extremely sparse at this point.

The team intends to work closely from the outset with ranchers, public lands management agencies, Border Patrol, environmental groups and other wildlife scientists to assure the timely and consistent sharing of information.

"For the northern jaguar, we know there is a breeding population south of the border in Sonora, Mexico. It is unknown how many there are, where exactly their central habitat is and how far and how much they roam."

Several organizations in Mexico are working on getting a better idea of jaguar distribution and movement patterns, and facilitating the sharing of data and information is another goal of the project.

The jaguar (*Panthera onca*) represents the only species of the genus *Panthera* in the New World. The genus comprises the big cats of the world, including the lion, tiger and leopard. Even though its core range is in the tropics, jaguars were historically documented in the U.S.

To determine the most promising sites to place cameras, the team will use an approach called geographic information system, or GIS. With GIS, various landscape variables such as topography, water features, land use status and measurements such as distance to human infrastructure are digitally mapped to predict the best probable locations to place the cameras.

"We'll be looking at mountain ranges with rich biodiversity, rugged topography and as far away from human presence as you can get," Haynes said. "Those are the main criteria for good jaguar habitat."

Once areas that are most likely to be frequented by jaguars have been identified, 240 trail cameras will be set up in pairs at 120 sites to allow for photographing both sides of an animal. This ensures that pictured individuals can be identified by the unique rosette-spot patterns on their fur. Animals that walk past the camera activate an infrared sensor and the camera takes their picture.

With the aid of a specialized software system, the team will then data-mine the images to find out which species of wildlife frequent certain locations at certain times. These ancillary data on other animals, including important prey species, such as deer and javelina, also yield clues to the possibility of jaguar presence.

"DNA extracted from scat holds extremely valuable information," Culver said. "Not only does it enable us to identify individual jaguars, but over time, genetic data can amount to sufficient quantities as to where they tell us about migration routes, diet, health and genetic population structure – all critically important data that are necessary to make informed decisions about the management and protection of this endangered species."

"We look at this project as an opportunity for a fresh start regarding

jaguar monitoring in the United States," said Kirk Emerson, a faculty member at the UA's School of Government and Public Policy. "We want to be sure to share information and work together with stakeholders for the benefit of jaguars, landowners and managers, and wildlife in this region."

Provided by University of Arizona

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