

## Mammal diversity monitoring in Saguaro National Park, Arizona

### Focus

Medium-sized and large mammals

### Methods

Randomly placed, unbaited wildlife cameras (camera traps) to monitor species richness and other community parameters

### Key partners

Friends of Saguaro National Park, National Park Foundation, Sky Island Alliance, and others

### Participation

Park biological technicians, youth interns (as many as 10), volunteers, and high school students

### Number of species

24 native species, plus nonnative dogs, cats, and cows

### Summary

We used unbaited camera traps in a random design to estimate species richness of large and medium-sized mammals for long-term monitoring. We stratified the park's two units by elevation, established and randomly selected 1 km<sup>2</sup> (0.4 mi<sup>2</sup>) grids, and designated random points within each grid. We set cameras in a location where they operated continuously for six weeks. We then moved the cameras to a different location for another six-week sample. This pattern of moving cameras throughout the sampling period of May 2011 to August 2012 helped us attempt to equalize sampling effort in each stratum. We collected 4,751 photos of 24

native medium-sized and large species over 14,693 camera nights. We estimated that 25 (SD = 0.91) medium-sized and large mammal species occur in Saguaro National Park. We compared our results with a similar randomized, though less comprehensive, survey in 2000–2002, and determined that no significant change in species richness has occurred parkwide over the past decade. However, we did not detect several species in the Tucson Mountain District that were photographed previously. This project also included a large educational component. We had students set and check wildlife cameras throughout the year and as part of the 2011 NPS–National Geographic Society BioBlitz. We also created a dedicated Web site for wildlife photos with the Friends of Saguaro National Park (<https://saguowildcams.shutterfly.com/>).

### Implications

Mammals are a high-profile taxonomic group in many parks, but most mammal monitoring is limited to threatened species or charismatic game species. Wildlife cameras are often used to monitor marked animals or at artificial water sources; however, few parks use them to monitor their mammal biodiversity. Saguaro National Park's long-term monitoring program uses camera traps to track the status of the entire community of medium-sized and large mammals in the park, which includes both high-profile species (e.g., mountain lions) and very elusive and vulnerable species (e.g., ringtails and American badgers). We are working with our partners in southern Arizona to develop a protocol for other parks and refuges that includes occupancy analysis and builds on knowledge gained from two international camera-trap programs that are particularly relevant for U.S. national parks: the Wildlife Picture Index (WPI) and the Terrestrial Ecology Assessment and Monitoring (TEAM) network (see article below).

### Park contact

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