

Article

Slithering Towards Hope: Sidewinder Inventory Reveals Snake Status in Saguaro National Park

[Saguaro National Park](#)

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While strolling through the desert, researchers are filled with joy at the sight of a small, rare snake slithering sideways across the sandy terrain. The lightly colored sidewinder (*Crotalus cerastes*), with dark patterned scales, effortlessly blends into its surroundings at Saguaro National Park (NP) in Arizona. Spotting this species is a highlight of an evening in the field, considering its rarity and the significant role it plays in the desert ecosystem.



NPS/Adamson

Why Do Snakes Matter?

[Rattlesnakes](#) like sidewinders play an integral role in ecosystems as both predators and prey. Snakes are carnivores, and at Saguaro NP, sidewinders commonly prey on desert rodents.

Predators and prey are intertwined through several parts of the food chain, so ecosystems without snakes may face ecological imbalances. Their disappearance could result in an overpopulation of rodents, or a decline in certain bird populations—such as owls and eagles—that prey on sidewinders. As Saguaro NP biologist Don Swann put it, “That fabric of life, animals and plants, are all connected to each other and in a way that we don’t fully understand. And rattlesnakes like sidewinders are an important part of the ecosystem. It’s an animal that deserves respect and our efforts to protect it.”



The hornlike scales above the sidewinder's eyes can fold down to protect its eyes from sandy terrain.

NPS/Hetherington

Cruising Towards Methods

Sidewinders' crucial role in the ecosystem called for research to find out how common—or rare—this species is in the park, and if actions are needed to protect it. As a collaborative effort between Saguaro NP staff and the National Park Service's [Inventory & Monitoring Division](#), scientists conducted three types of distribution and abundance surveys in the park's Tuscon Mountain District. First, they counted the number of snakes while walking a straight line that cut through the desert called a “transect.” Second, known as “wash” surveys, researchers made observations while following the natural contours of dry riverbeds. Lastly, they drove on roads in

and adjacent to park boundaries at low speeds through a method called “road cruising” in search of sidewinders.



Sidewinders are exceptional at blending into their desert surroundings.

NPS/Hetherington

Connecting the Results

Out of 519 transect surveys, 176 wash surveys, and 69 road cruising surveys— 36 total sidewinders were found. Researchers also recorded all snakes found during surveys, for a total of 421 snakes of 15 different species. The common western diamond-backed rattlesnake (*Crotalus atrox*) was used to compare densities with sidewinders. More than half of the sidewinders were encountered during road surveys, where their camouflaged pattern doesn't conceal them as well as the desert environment. Unfortunately, 5 (or 14%) of the sidewinders were found dead on the roads. In and around Saguaro NP, road traffic and local development have fragmented the snakes' habitat, resulting in road incidents and a reduction of connectivity. Connectivity is the interconnectedness between various habitats in an environment, allowing biodiversity to thrive through opportunities for resources and reproduction. Habitat fragmentation is one of the biggest threats to the local sidewinder population.

Steps to Conservation

Sidewinders are small creatures that face big threats. To combat those threats, this research is part of a larger effort to [improve connectivity](#) and sustain healthy ecosystems in the park. Observing 36 sidewinders was a pleasant surprise to researchers, considering their rare appearances and small stature. The purpose of this species inventory was to provide a foundation for park managers to create a long-term monitoring protocol that tracks status and trends in the population. These survey results may also lead to conservation efforts, such as reducing traffic speeds to help protect the snakes.

During this project, sidewinder tissue samples were collected for future genomic analyses. Maintaining habitat connectivity provides the major benefit of gene exchange between individual snakes from different populations, leading to genetic diversity. The goal of this future research is to compare the samples with DNA of sidewinders outside the park. This would reveal the status of reproduction rates and genetic diversity of the local population. It would also inform park managers of the possible need for habitat preservation adjacent to the park to increase connectivity. Research like this provides hope that sidewinders will persist within the park through actions taken to protect them.

This article was summarized from the source below:

Gardner C, Goode M, Philippi T, Swann D. 2024. Using transect sampling and road cruising surveys to estimate abundance and distribution of sidewinders (Crotalus cerastes) in Saguaro National Park, Tucson Mountain District: Final report. Science Report. NPS/SR—2024/104. National Park Service. Fort Collins, Colorado. <https://doi.org/10.36967/2302204>