



MCDOWELL
SONORAN
CONSERVANCY

Tortoises and Habitat Connectivity

Why It Matters

Consider yourself fortunate if you've ever spotted a Sonoran desert tortoise in the wild! These seldom-seen animals are vital to the desert ecosystem, providing food for other species as well as shelter through the burrows they dig.

As a long-lived species with slow recruitment (few young survive to adulthood), the desert tortoise is vulnerable to human and environmental pressures. Major threats facing this species include habitat loss and fragmentation, removal from the wild, disease, introduced species, climate change, and more.¹ In some populations, survival of adults has decreased with drought severity, particularly in portions of their range that are most arid and nearest to human development.² In Arizona, the Sonoran desert tortoise is protected through its designation as a Tier 1 Species of Greatest Conservation Need.³

Little is known about the tortoise population in McDowell Sonoran Preserve or what factors might be affecting it. Understanding how human activities might influence this sensitive species will help the Conservancy and the City of Scottsdale make appropriate management decisions to protect the tortoise and the Preserve ecosystem.

The Conservancy's Work

Through generous support from the Arizona Game and Fish department's Heritage Fund and the City of Scottsdale, the Conservancy is studying the local tortoise population using a combination of surveys, radio telemetry, and GPS tracking. Trained teams survey for tortoises in the Preserve, with the goal of attaching radio transmitters to at least 20 animals. All animals are weighed, measured, marked, and given a health assessment, which helps monitor for evidence of disease or other potential issues. Transmittered tortoises are recaptured for annual health assessments and monitored routinely throughout the year.

In spring 2022, transmittered tortoises received GPS trackers, which provide a location every half-hour for each individual. These trackers do not affect tortoise behaviors or movements. Tracking desert tortoise movements provides a better understanding of how these animals are using the Preserve and what factors might affect their population. Information about this population also helps understand trends throughout this species' range and how to best protect it into the future.

Additionally, this project feeds into our knowledge of how the Preserve acts as a habitat linkage within the larger region. The Preserve provides a vital connection for nearly 3 million acres of protected landscapes, extending from Tonto National Forest through the Preserve and into McDowell Mountain Regional Park. Understanding how species such as tortoises, mule deer and more move about the landscape is essential for determining management needs to maintain that connectivity and ensure these species continue to thrive in this area.



What's Been Found

Field work began in April 2021 and has been very successful. We have marked over 60 tortoises in the Preserve, and several more have been observed or reported by other individuals. Transmitters have been attached to 20 adults for four active seasons, three of those including GPS tracking. We found that the transmitted tortoises frequently move throughout their active season (roughly April – October), with activity and distance of movements increasing during the monsoon season. They overwinter in their burrows for brumation (reptile hibernation) during the inactive season. And although their daily activity tends to peak near sunset and sunrise, we have documented movement at night, particularly in the summer season.



In addition, we found that tortoises tend to have a microhabitat of well-established locations they visit regularly including their summer burrow, winter burrow, drinking rock, and the burrows of other tortoises. Some tortoises are very particular and seem to use the same locations year-to-year, while vary in their movement patterns. Although tortoises frequently are found far from human activities, we have documented numerous tortoises interacting with trails, trailheads, residential areas, roads, or active construction sites. In addition, three tortoises (that we know of) have been removed from the Preserve by visitors. Removing tortoises from the wild is not only illegal, as they are protected in the state of Arizona, but also determinantal to their health. Out of the three tortoises that were removed and released back into the Preserve, two of them have since been found deceased. Relocation can be very difficult for reptiles, particularly those that are already stressed.⁴ To address this situation, we created a Keep Wildlife Wild campaign in collaboration with partners to encourage visitors of the Preserve to leave wildlife alone and reduce harm to the already vulnerable tortoise population.

Continued tracking will allow us to determine areas typically used by each individual, short- and long-distance movement patterns, annual variation in movement, long-term survival strategies, and much more. From this information, the influence of natural and human factors can be teased out to help inform management needs.

How you can help:

1. Tortoises are protected in the state of Arizona. If you see one, please do not touch, handle or move it, unless it is in imminent danger (e.g., on a busy road). If concerned, call the **Desert Tortoise Adoption Program 844-896-5730**.
2. Please report any sightings of tortoises in [iNaturalist](#) while adventuring in nature.
3. Learn more about the [Sonoran desert tortoise](#).
4. Support McDowell Sonoran Conservancy [with a donation](#) or volunteer as a [Conservancy steward](#)

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4. Sullivan, Brian K., Erika M. Nowak, and Matthew A. Kwiatkowski. "Problems with mitigation translocation of herpetofauna." *Conservation Biology* 29.1 (2015): 12-18.