

Chihuahuan Desert Network Reptile and Amphibian Inventory

White Sands National Monument

Source: D. Prival and M. Goode, University of Arizona.

Introduction and Background

In 2003 and 2004, the University of Arizona conducted an inventory of reptiles and amphibians (herpetofauna) in six parks of the National Park Service's Chihuahuan Desert Network including White Sands National Monument (NM), located in south central New Mexico. Prior to this inventory, little was known about reptiles and amphibians in the network parks, including species of special conservation concern. The primary objectives of this inventory were to document reptile and amphibian species, map the distribution of all species found, and determine a rough relative abundance for each species. The results from this may assist in future monitoring efforts. This summary presents information from the surveys at White Sands NM. Summaries of the surveys conducted at the other Chihuahuan Desert Network parks are available on the Learning Center of the Southwest website, www.southwestlearning.org.

White Sands NM is located in the Tularosa Basin of the Chihuahuan Desert and is part of the largest white gypsum dune field in the world. Desert scrub and a large playa are present on the western side of the park. To reach this habitat, the researchers had to drive across the White Sands Missile Range



Little striped whiptail lizard (*Cnemidophorus inornatus*) at White Sands National Monument.

PROJECT SUMMARY



Painted desert glossy snake (*Arizona elegans philipi*) at White Sands National Monument.

and follow many regulatory requirements which hampered the survey effort. In 2003, the researchers conducted surveys from May to September. Only 15 person-days of data are available for 2004 because of the limited staff availability and loss of data.

Methods

Several searching approaches were used to find reptiles and amphibians: foot surveys, incidental observations, pitfall traps, and road cruising. In 2004, the researchers used different approaches than in 2003 to maximize the likelihood of finding different species. For each reptile or amphibian observed, the researchers recorded data such as location, time, weather, and species.

The majority of observations were recorded during *foot surveys*: 360 animals in 22 species. The searches were conducted at times when reptiles and amphibians were most likely to be active (morning around sunrise and evening around sunset). Most of the foot surveys were conducted off-trail. While on foot, the researchers looked under rocks and logs, and used mirrors and flashlights to illuminate crevices.

Incidental observations were recorded while the researchers were not conducting formalized searches (e.g., on days off or while driving to a search area). Incidental observations accounted for 230 animals in 26 reptiles and amphibian species.

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Pitfall traps were used to capture small reptiles and amphibians running or crawling across the ground. In 2003, two sets of pitfall and funnel traps were checked by park staff and volunteers daily (138 times). 219 reptiles and amphibians of 16 species were caught in pitfall traps. The traps in White Sands NM were dismantled after the project.

Road cruising surveys, in which a crew drives at night to find amphibians and nocturnal snakes and lizards, were also used. Only one animal was found in White Sands NM while road cruising.

Voucher specimens were collected for nearly each species found in the park. Voucher specimens provide proof that the species actually occurred in the park during the inventory and help to confirm it was correctly identified in the field. A total of 29 voucher specimens representing 27 species were collected in White Sands NM. Voucher specimens provide important data about reproduction, diet, health, and morphology. DNA collected from voucher specimens can be used to examine population questions, and genetic relationships within and between species. Voucher specimens previously collected in the parks are spread among many institutions. For this inventory, the voucher specimens from White Sands NM are on permanent loan to and stored at Museum of Southwestern Biology, University of New Mexico, Albuquerque, and are freely available to researchers and managers.

Results

In total, 810 reptiles and amphibians were found at White Sands NM by the researchers during this inventory, representing 28 species: six toads, 10 lizards, 11 snakes, and one turtle. No state or federally listed or nonnative species were found during this inventory.

Discussion

In order to determine what percentage of the total herpetofauna community known to occur within White Sands NM that was documented in this inventory, the results were compared to existing lists of reptile and amphibian species likely to occur in the monument. The researchers attempted to document as many species as they could. It is estimated that there are probably 10 species that are likely to occur in White Sands NM that were not observed during the inventory (one salamander, four lizards, and five snakes), meaning this inventory may have documented 74% of the reptile and amphibian species in the park.

The data from this inventory can be used as baseline data that may be useful to a monitoring program. Long-term monitoring and/or repeated inventories may help detect changes within reptile and amphibian communities caused by climate change,



Spadefoot toad (*Spea* sp.) in White Sands National Monument.

drought, invasion by nonnative species, wildland fire, or other factors. Reptile and amphibian populations can change dramatically between surveys in a given year due to the timing and amounts of precipitation. The researchers provided suggestions and evaluations of potential monitoring strategies such as monitoring species composition, monitoring species richness, monitoring species distribution, and monitoring relative abundance. Based on this study, the researchers concluded that weather has an important effect on the success of a given survey and it is important to survey each area multiple times within a season.

Literature Cited

Prival, D., and M. Goode. 2005. Chihuahuan Desert national parks reptile and amphibian inventory. Final report. University of Arizona.

Project Contacts

Dave Prival, deprival@yahoo.com

Matt Goode, Research Specialist, University of Arizona, mgoode@ag.arizona.edu, <http://www.snr.arizona.edu/node/671>