MOJAVE NETWORK
Inventory Summary Report

INVENTORY OF AMPHIBIANS AND REPTILES AT DEATH VALLEY NATIONAL PARK


Pacific Treefrog - Photo courtesy Bob Parker

INTRODUCTION AND OBJECTIVES

In cooperation with the Mojave Network, the USGS Colorado Plateau Research Station at Northern Arizona University conducted an inventory of amphibian and reptile species in Death Valley National Park (DEVA) from 2002 to 2004. The inventory sought to document at least 90% of the species present. Additional objectives included documenting one voucher specimen for each species identified, and providing a GIS-referenced list of species that are federally or state listed, rare, or worthy of special consideration and description of their distribution.

METHODS

This inventory used targeted sampling methods, rather than randomized plots or transects. Survey effort was concentrated in areas identified by park managers that lacked adequate baseline information on species occurrence, had a high potential for increasing the park species list, or were of special management concern. Many of these areas were added to the park as part of the 1994 California Desert Protection Act.

General Surveys - Daytime surveys varied from short duration searches of specific habitats to all-day hikes over extensive areas. Nocturnal surveys, done to target aquatic habitats, included an aural component and searches of pools and streams for tadpoles and egg masses. Dry washes and sand dunes were also surveyed at night in search of snakes. For all visual encounter surveys the area searched, weather conditions, habitat information, and observations of all amphibians or reptiles encountered were recorded.

Nighttime Road Driving - Night road driving surveys were done at speeds of 20-30 km per hour while scanning the road in the headlights of the vehicle. All amphibians and reptiles encountered were identified and sex, age, and location were recorded.

Pitfall Traps - 35 pitfall traps were operated in the Panamint Mountains, targeting salamanders. Traps were 15 cm by 46 cm, constructed of plastic piping, and buried flush with the ground surface. Traps were arranged non-systematically and were connected by drift fences to direct animals into the traps. Boards were used to keep traps shaded and attract animals seeking cover. All captured animals were identified and released.

Random Encounters - Amphibians and reptiles seen not during formal surveys were referred to as random encounters and standard data was recorded as possible.

Spatial Data Collection - Individual capture locations of uncommon species and survey areas were recorded using hand-held GPS units.

Voucher Specimens - One specimen was collected to document each new species and several road-killed animals found in good condition were salvaged. All specimens were deposited in the natural history collection facility at DEVA and tagged with species, collector, date, and collection site data.

Project Synopsis

Partner: USGS Colorado Plateau Research Station at Northern Arizona University
Principal Investigators: Trevor Persons, Erika Nowak
Documented: 40 Amphibian and Reptile Species
Project Duration: 2002 - 2005
Cost: $49,939

Literature and Museum Specimen Review - The literature review included species-specific and ecological literature, as well as unpublished reports relating to amphibians and reptiles within the park. Experts familiar with aspects of the herpetofauna in the region were consulted. Museum specimen records previously entered into NPSpecies and collection data for uncommon species were reviewed to verify that specimens were collected within the current park boundaries. Specimens in the DEVA natural history collection facility were reviewed for possible misidentification.


Common Chuckwalla - Photo courtesy Jason Pilarski

RESULTS AND DISCUSSION

This inventory recorded 37 species during surveys, including two species new to the park, and three additional species through literature review and museum specimen database searches, making the total documented species 40 (4 amphibian, 36 reptile). Overall inventory completeness is 92%, with 9 potentially occurring species remaining unverified. Inventory completeness for amphibians is 73% and 95% for reptiles. 2,463 individuals were recorded. The most commonly observed species was the Side-blotched Lizard, accounting for 26% of all observations. The Western Toad was the most frequently observed amphibian species, accounting for 59% of amphibian observations. The most frequently observed snakes were the Sidewinder and the Speckled Rattlesnake, together accounting for 41% of snake observations.

Specimens Collected - 11 reptile specimens were collected at DEVA, eight of which were road-killed animals. Specimens for two new species, the Southern Alligator Lizard and Ring-necked Snake, were collected, as well as the Mojave Fringe-toed Lizard, which had no existing voucher.

Rare, Exotic, or Sensitive Species - A single Desert Tortoise, found near the southern end of Greenwater Valley, was the only recorded species listed under the federal Endangered Species Act. The Panamint Alligator Lizard and Mojave Fringe-toed Lizard, both documented in DEVA, are listed as Species of Special Concern in California, as are the undocumented Inyo Mountains Salamander and Northern Leopard Frog. The exotic Bullfrog, native to the eastern US, is abundant in the Saline Valley salt marsh. There is a population of Black Toads in DEVA, listed as Threatened in California, which is likely introduced. Preliminary genetic analysis of the Southern Alligator Lizard specimen collected at Scotty's Castle did not determine if the DEVA population is native or introduced.

RECOMMENDATIONS AND FUTURE WORK

Future Inventory Work - Repeated surveys in Saline Valley may provide a stronger indication as to whether the introduced population of Black Toads at DEVA is extirpated. The Inyo Mountains Salamander is now known to occur less than 1.6 km outside of DEVA and additional surveys should be conducted to determine its status within the park. For Reptiles, future efforts should focus on documenting Long-tailed Brush Lizard and Mojave Rattlesnake. These species probably occur in the vicinity of the Ibex Dunes, and may occur in other sandy areas with large creosote bushes or mesquite hummocks along the Amargosa River floodplain.

Long-term Monitoring - Monitoring of rare amphibian and reptile species, often of interest as vital signs of ecosystem health, would be difficult because they are so hard to locate. Instead, herpetofauna monitoring at DEVA should focus on the entire community, and targeted monitoring should focus on the most common species or species groups. The status of Bullfrogs at DEVA should be monitored in an effort to prevent the species from becoming established elsewhere in the park. It is also recommend that Bullfrogs be eradicated from the park, especially in the more natural aquatic systems in the Saline Valley, as they may severely impact native vertebrate species.