

Publication Brief for Resource Managers

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Threatened Desert Tortoise Actually Comprised of Two Distinct Species

The desert tortoise (*Gopherus agassizii*) — a species federally listed as threatened — may be actually only found in 30 percent of its known geographic range.

A study published in the journal *ZooKeys* proposes that desert tortoises found in the remaining 70 percent of that range should be recognized as a distinct species (*Gopherus morafkai*), based on genetic and morphological evidence.

Researchers from the Royal Ontario Museum in Canada, USGS, University of Arizona, California Academy of Sciences and Lincoln University propose that Morafka's desert tortoise (*G. morafkai*) should refer to populations naturally found south and east of the Colorado River, from Arizona extending into Mexico, while populations naturally found north and west of the Colorado River in Utah, Nevada and California represent the originally recognized and federally listed species, *G. agassizii*.

The genetic evidence confirms previous suspicions that tortoises west and east of the Colorado River are two distinctive species. Evidence suggests that *G. morafkai* populations could also be further split into multiple species, but further analysis is needed.

Agassiz's and Morafka's tortoises have unique habitat preferences. Morafka's tortoise prefers to hide under rock crevices on steep, rocky hillsides, while the threatened Agassiz's tortoise prefers to dig burrows in flat valleys and dry riverbeds.

Specimens stored at the Smithsonian Institution and the California Academy of Sciences contributed to the genetic and morphological analyses.

Management Implications

- Recognizing *G. morafkai* as a distinct species will limit genetic reservoirs and potential habitat that can be conserved in order to promote recovery of *G. agassizii* in California, Nevada and Utah.
- The resulting range decrease for *G. agassizii* may affect energy development projects that do not yet have their state and federal endangered species permits and exemptions.
- *G. morafkai* itself will likely require federal listing, due to similar habitat-loss trends, although *G. morafkai* and *G. agassizii* have different habitat and topography preferences.

THIS BRIEF REFERS TO:

Murphy, R.W., K.H. Berry, T. Edwards, A.E. Leviton, A. Lathrop, J.D. Riedle. 2011. The Dazed and Confused Identity of Agassiz's Land Tortoise, *Gopherus agassizii* (Testudines, Testudinidae) with Description of a New Species, and Its Consequences for Conservation. *ZooKeys*. doi: 10.3897/zookeys.XX.1353.

<http://www.werc.usgs.gov/boxsprings>

<http://www.werc.usgs.gov/ProductDetails.aspx?ID=4XXX>



Collected in 1912, specimen 33867 from the California Academy of Sciences is now recognized as a distinct species, *Gopherus morafka*. Image credit: CAS.