## **Sonoran desert tortoise (*Gopherus morafkai*)**

Status

Protected under a Candidate Conservation Agreement (May 27, 2015)

Species Summary Table

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| --- | --- | --- | --- |
|  | Feeding | Breeding | Sheltering |
| Juvenile | Adult | Adult | Juvenile | Adult |
| Habitat | Rocky habitats, bajadas, and washes within Sonoran or Mohave Desertscrub | Rocky habitats, bajadas, and washes within Sonoran or Mohave Desertscrub | Rocky habitats, bajadas, and washes within Sonoran or Mohave Desertscrub | Below rocks, boulders, vegetation, on semi-open slopes, caliche caves of washes, or rocky crevices | Below rocks, boulders, vegetation, on semi-open slopes, caliche caves of washes, or rocky crevices |
| Prey | Primarily plants, some bones, and soil | Primarily plants, some bones, and soil | Primarily plants, some bones, and soil | N/A | N/A |
| Perches | N/A | N/A | N/A | N/A | N/A |
| Cover | Open areas with cover nearby | Open areas with cover nearby | N/A | Full cover  | Full cover  |
| Temperature | Cooler temperatures in spring time and after rainfall events | Cooler temperatures in spring time and after rainfall events | N/A | During extreme temperatures  | During extreme temperatures |
| Lighting | N/A | N/A | N/A | N/A | N/A |
| Moisture | Emerge in response to precipitation | Emerge in response to precipitation | Highly dependent on summertime monsoon events | During periods of drought | During periods of drought |
| Sound | N/A | N/A | N/A | N/A | N/A |
| Water | Drought tolerant, but require periodic free-standing water  | Drought tolerant, but require periodic free-standing water | N/A | N/A | N/A |
| Dispersal | 0.01 to 1.0 square mile | 0.01 to 1.0 square mile | 0.01 to 1.0 square mile | 0.01 to 1.0 square mile | 0.01 to 1.0 square mile |
| Seasonal Activity | Early-mid spring, during monsoon season | Early-mid spring, during monsoon season | July through October | Daily and year-round, but dormant from mid-November to mid-February.  | Daily and year-round, but dormant from mid-November to mid-February. |

Life History

*Species Description and Ecology*

The adult desert tortoise is a fairly large (8–15 inches in length) tortoise with a high domed brownish carapace, yellowish unhinged plastron, short tail, and stocky limbs. Both the carapace and plastron exhibit prominent growth lines, and the forelimbs are covered with large conical scales (USFWS 2015).

Sonoran desert tortoises are long-lived and are thought to have three life stages: young juveniles, older juveniles (sub-adults), and adults. Time within each life stage is dependent on the size of the animal. Young juveniles include hatchlings and very small juveniles up to about 5 years of age or when their shells harden. After their shells completely harden, they are considered to be within the older juvenile life stage until they reach sexual maturity. This can be from age 6-15, but it is largely dependent on precipitation trends. Most tortoises are considered adults from around 16 years of age (USFWS 2015).

Desert tortoises spend much of the winter months dormant within their burrows and tend to only emerge in response to precipitation or other physiological needs. Precipitation is an important factor for the desert tortoise because free-standing water is critical for their survival during long periods of drought. Surface activity for desert tortoises occurs primarily during daylight hours from early – mid spring, and then again during summer monsoons (USFWS 2015).

Desert tortoises eat a variety of plants including fresh winter and summer annuals, perennials, dried annuals, and plant litter. In addition to being herbivores, they also consume bones and soil especially that of exposed calcium carbonate, to help grind plant matter in their stomachs and supplement their diet with nutrients and minerals not found in plants (USFWS 2015).

*Reproduction*

Sonoran desert tortoise breeding season typically occurs from July to October. Approximately half of adult females reproduce in any given year, though once mated, females are capable of storing sperm for up to two years. This allows them to lay fertile eggs for up to two years after a single mating. Females dig a nest hole in the soil and may lay one clutch of 1 – 12 eggs per year, typically around the onset of the summer monsoon season. After depositing eggs, the female fills in the nest hole and may defend the site for some time against potential predators (USFWS 2015).

*Suitable Habitat*

Sonoran desert tortoises typically inhabit the bajadas and rocky, steep slopes of Mojave Desertscrub and both subdivisions of Sonoran Desertscrub, but can be found in other habitat within western and central Arizona between 900 and 4,200 feet elevation east and south of the Colorado River. Desert tortoises most often occur in a paloverde-cacti mix with boulders, rocky outcrops, and natural ground cavities nearby. They require loose soils to excavate shelters below rocks, boulders, and vegetation on semi-open slopes, but will also shelter in caliche caves of washes, or otherwise in rocky crevices. These shelter sites are one of the more important components of desert tortoise habitat since they shelter for long spans of time to avoid temperature extremes and drought conditions (USFWS 2015).

The Sonoran desert tortoise also utilizes inter-mountain valleys for dispersal at all life stages and these areas are considered part of their home range. Home ranges vary in size based on rainfall levels, with small home ranges in wet years and larger home ranges in dry years. Typically, these tortoises will occupy from 0.01- 1.0 square mile with high fidelity to their home ranges except when dispersing to new areas. Tortoise dispersal into new areas is typically related to physiological needs such as food and shelter availability and suitability (USFWS 2015).

Threats

Primary threats to Sonoran desert tortoise include habitat loss and fragmentation. Urban, agricultural, and road development have resulted in significant loss and fragmentation of the species habitat. Other factors causing the loss or alteration of tortoise habitat include invasion of exotic annual grasses and forbs which have changed fire regimes resulting in more frequent large scale destructive wildfires, climate change and drought. Additional threats to the species include human tortoise interactions such as off-road vehicle use, illegal collection, and illness from the release of captive tortoises into the wild, and handling of wild tortoises (USFWS 2015).

Range and Survey History

Sonoran desert tortoises within Arizona occupy rocky and boulder strewn mountains and hills east and south of the Colorado River. This includes portions of western and central Arizona between 900 and 4,200 feet elevation within the Mohave and Sonoran Desertscrub biotic communities. Based on available data, the current range and distribution for the species is largely the same as was historically documented. No population extirpations or range reductions have been documented in Arizona (USFWS 2015).

Include information in this section to establish an environmental baseline (i.e. survey data, local status, etc) for Sonoran desert tortoise within your projects vicinity. The following references and resources may assist in establishing an environmental baseline. Always obtain permission from the ADOT biologist prior to contacting outside agencies about an ADOT project.

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| US Fish and Wildlife Service |
| Jeff Servoss | Species Lead  |  | Jeff\_Servoss@fws.gov |

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| Arizona Game and Fish Department  |
| Cristina Jones  | Turtles Project Coordinator | (623)236-7767 | CAJones@azgfd.gov |
| Website: https://www.azgfd.com/wildlife/nongamemanagement/tortoise/ |

Notes: 1Consultants are NOT to discuss potential effect findings with outside agencies.

2Red text is to be removed prior to placing this evaluation into a Biological Evaluation.

References

US Fish and Wildlife Service (USFWS). 2015. Species Status Assessment for the Sonoran Desert Tortoise. Version 1.0, September 2015. US Fish and Wildlife Service, Southwest Region, Albuquerque, NM.