

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: ARACF12040

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Phrynosoma mcallii* (Hallowell, 1852)
COMMON NAME: Flat-tailed Horned Lizard
SYNONYMS: *Anota m'calli*; *Phrynosoma m'callii*; *P. mcalli*
FAMILY: Phrynosomatidae

AUTHOR, PLACE OF PUBLICATION: Hallowell, E., 1852. Descriptions of new species of reptiles inhabiting North America. Proc. Acad. Natur. Sci. Philadelphia 6: 177-184.

TYPE LOCALITY: "Great Desert of the Colorado, between Vallicita [Vallecita] and Camp Yuma, about 160 miles east of San Diego."

TYPE SPECIMEN: Unknown.

TAXONOMIC UNIQUENESS: Monotypic species. Fourteen species in genus, ranging from British Columbia to Guatemala and from Arkansas to the Pacific Coast.

DESCRIPTION: A medium-sized lizard with snout to vent lengths between 2.2 – 3.4 in (6.3 – 8.6 cm). The wide oval-shaped body and tail are flattened, and are scattered with enlarged pointed scales on both the upper body and tail. The back skin is smooth with small spines. Extending from the back of the head are two elongated occipital horns (3-4 times longer than the basal horn width), and six temporal horns. Additionally, long and narrow spines occur on the lower jaw and two rows of fringe scales on both sides of the body; the bottom row scales are smaller than the upper. They lack external ear openings. Their coloring dorsally is pale gray, buff, brownish, tan, or white, matching the sand and soil; occasionally with greenish cast to back. The belly is white and unmarked. This is the only horned lizard with a dark mid-dorsal strip. The fringe scales consist of round brown spots with yellow or white centers.

AIDS TO IDENTIFICATION: *Phrynosoma mcallii* is the only horned lizard with dark a mid-dorsal stripe. It differs from the desert horned lizard (*Phrynosoma platyrhinos*), which also occurs in its range, by its dark vertebral stripe, two rows of fringed scales on each side of the body, lack of external ear openings, and unmarked white ventral surface in most individuals (Foreman 1997 in USFWS 2003).

ILLUSTRATIONS:

B&W drawing (Stebbins 1985: Pl. 21)

Color drawing (Stebbins 2003: Pl. 33)

Color photo (Behler and King 1988)
Color photo (Behler and King reprinting 1992: Pl. 334)
Color photos (Tucson Herpetological Society, accessed 2003 in <http://www.arts.arizona.edu/herp/flat.html>)
Color photo (California Herpetological Society, accessed 2003 in <http://www.faultline.org/news/2003/01/phrynosoma.html>)
Color photos and line drawings of head (<http://uts.cc.utexas.edu/>)
Color photos (<http://yumabirding.org/lizards.htm>)

TOTAL RANGE: Endemic to the Sonoran Desert from Coachella Valley in extreme southern California, south to head of the Gulf of California, taking in extreme southwest Arizona, northeast Baja California and extreme northwest Sonora. This distribution is not contiguous across its range, because of fragmentation by large-scale agricultural and urban development.

RANGE WITHIN ARIZONA: Extreme southwest corner of the state; essentially the Yuma Desert west of the Gila Mountains and south of Interstate 8.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: A diurnal lizard that burrows into the sand in midday to avoid the heat. It also burrows to escape the cool of night. Burrowing is accomplished by side-to-side shuffling. Hibernation by most adults may begin as early as October and end as late as March. Some adults may emerge as early as February, while juveniles may remain active all year. They do not aestivate in the summer, but will retreat into shallow burrows or burrow into the sand to avoid the heat. Self-constructed hibernation burrows range within 5-10 cm (2-3.9 in) of the surface.

When threatened, these horned lizards can run away very quickly, and they do not squirt blood from the eyes in defense like other horned lizards. They generally remain still or may bury themselves in the loose sand, when approached. This reluctance to move when disturbed, together with cryptic coloration, and the flattening of the body to hide their shadow, makes them very difficult to locate in the field and is their main defense. Predators include round-tailed ground squirrels (main predator), loggerhead shrikes, grasshopper mice, snakes, canids, American kestrels, common ravens, and burrowing owls (Muth and Fisher 1992, Duncan et al. 1994, Young and Young 2002 in USFWS 2003).

Home ranges of *P. mcallii* are relatively large, and differ between dry and wet years, and between the sexes. The mean home range for males was 2.5 ha (6.2 ac) during a dry year versus 10.3 ha (25.5 ac) during a wet year. Female mean home ranges were smaller at 1.3 ha (3.2 ac) and 1.9 ha (4.7 ac) in dry and wet years, respectively (Young and Young 2000 in USFWS 2003).

Lifespan is around 6 years in the wild and up to 9 years in captivity.

Hybridization may be occurring between *P. mcallii* and *P. platyrhinos*, where their range overlaps. According to USFWS (2003), "Apparent hybrids between the two species, exhibiting a mix of morphological characteristics, have been observed in the vicinity of Ocotillo, California (Stebbins 1985), and southeast of Yuma, Arizona (K. Young, Utah State University, pers. comm. 2002).

REPRODUCTION: *Phrynosoma mcallii* mates April to May. They are oviparous, producing relatively small egg clutches of 3-10 eggs (5-6 on average), compared to most other horned lizards. Clutches are laid in May to June however multiple clutches may be laid within a breeding season.

FOOD HABITS: Mostly ants are consumed, generally of the genera *Messor*, *Pogonomyrmex*, *Conomyrma*, and *Myrmecocystus*. They may also take beetles and other arthropods. Because of the lack of freestanding water, flat-tailed horned lizards primarily use preformed water (water found in their food) to maintain proper water balance.

HABITAT: Flat-tailed horned lizards inhabit fine packed sand or pavement, overlain with loose, fine sand in areas that are sparse or lacking in vegetation. When dispersing, some individuals may be found in a mix of rocky and sandy substrate. In Arizona They use *Larrea tridentata* - *Ambrosia dumosa* - *Hilaria rigida* habitats dominated by sandy flats, commonly in association with the fringe-toed lizard (*Uma notata*). In California, they generally occur on lower parts of loose, wind-blown dunes.

ELEVATION: From below sea level (in Salton Sink) to around 820 feet (250 m), in areas with flat-to-modest slopes. In Arizona, it ranges from 155-540 ft (47-165 m) (AGFD, unpublished data accessed 2003).

PLANT COMMUNITY: Lower Colorado River Valley Subdivision of Sonoran Desert Scrub, in a creosote (*Larrea tridentata*)-white bursage (*Ambrosia dumosa*) plant association.

POPULATION TRENDS: Information concerning population dynamics of flat-tailed horned lizard populations is limited and inconclusive (USFWS 2003). Since 1979, population trends were monitored using a combination of scat counts and lizards observed along transects (Wright 2002 in USFWS 2003). Wright (2002) states "The relationship between scat counts and lizard abundance is unclear, or weak at best...while differences in scat abundance could indicate differences in lizard abundance, the observed decline in the rate at which scat is found could also be a result of increase in Off-Highway Vehicle activity resulting in crushed or buried scat, lower deposition rates, greater wind eradication, different observers, or additional factors. Furthermore, the use of scat counts does not account for variations in lizard activity, misidentification of scat from other species, scat production due to fluctuating

food resources, weather conditions that affect scat production or longevity in the field, observer differences, and small sample sizes.” The Bureau of Land Management (BLM) recently estimated the population size on one of the five managed areas (MAs) identified in a management strategy for the species. They used capture-mark-recapture (CMR) techniques incorporating detection probabilities, with positive results. The CMR methodology will be conducted soon for the other four MAs. (USFWS 2003).

Pronounced declines have been postulated for all areas now heavily urbanized or where agricultural practices dominate. Status uncertain in southern parts of their range (Mexico).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:

CCA (FTHL ICC 1997)
 [PT USDI, FWS 2010]
 [None – Removed (USDI, FWS 2003)]
 [PT USDI, FWS 2001]
 [None - Removed (USDI, FWS 1997)]
 [PT USDI, FWS 1993, 1996]
 [C1 USDI, FWS 1989, 1991]
 [C2 USDI, FWS 1985]

STATE STATUS:

1A (AGFD SWAP 2012)
 [WSC, AGFD, WSCA in prep.]
 [State Threatened AGFD, TNW 1988]

OTHER STATUS:

Not Bureau of Land Management Sensitive
 (USDI, BLM AZ 2010)
 [Bureau of Land Management Sensitive
 (USDI, BLM AZ 2008)]
 A, Determined Threatened in Mexico, at the
 species level, (Proyecto de Norma
 Oficial Mexicana 2000, 2010)
 [Category A, 1994 Mexican Fed Comm.]

MANAGEMENT FACTORS:

Flat-tailed horned lizards have a limited distribution, and are threatened by urban and agricultural expansion resulting in habitat destruction, energy development, OHV activities, pesticide use, military activities, introduction of non-native plants, and habitat degradation due to Border Patrol and illegal drive-through traffic along the United States-Mexico border. (USFWS 2003). They bask on roadways, thus road-kill is a major source of known mortality. The Border Patrol maintains many miles of roads in *mcallii* habitat, which depending on how often they are used, may contribute to mortality. The U.S. Military controls a high proportion of their habitat in Arizona.

PROTECTIVE MEASURES TAKEN: There is a closed season for this species, and there are restrictions on scientific collecting permits. Fully protected from take in California and Arizona. ACEC nomination on Barry Goldwater Range.

The FTHL has been proposed and then withdrawn for ESA listing multiple times for over two decades. In 1997, a Candidate Conservation Agreement was signed and a conservation management strategy has been implemented ever since (Flat-tailed Horned Lizard Interagency Coordinating Committee (FTHL ICC) 1997). In 2011, a proposed rule was published in the Federal Register to withdraw (again) the proposed rule to list the FTHL as threatened (USDI, FWS 2011).

The creation of 5 MAs (4 in California, 1 in Arizona), which are believed to represent approximately 35% of flat-tailed horned lizard habitat remaining in the United States (USFWS 2003). The five MAs were designed to identify large areas of public land where flat-tailed horned lizards have been found, as well as to include most flat-tailed horned lizard habitat identified as key areas in previous studies. The MAs were proposed based on accepted principles of good preserve design, and are meant to be the core areas for maintaining self-sustaining populations of flat-tailed horned lizards in the U.S. (USFWS 2003).

An annual progress report by the ICC on the implementation of the Flat-tailed Horned Lizard rangewide management strategy was prepared in 2014 (FTHL ICC 2014).

SUGGESTED PROJECTS: Distribution, habitat, population and life history studies are needed, or needed to be updated. Most important is locating a healthy population and setting aside a substantial preserve.

LAND MANAGEMENT/OWNERSHIP: BLM – Yuma Field Office; BOR – Yuma Area; DOD - Barry M. Goldwater Range; State Land Department; and Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION: “Scat” (fecal remains) records are unacceptable since they cannot be reliably distinguished from scat of sympatric *P. platyrhinos*.

Phrynosoma is Greek – *phrynos* – toad and *soma* – body – which refers to the squat, toad-like appearance.

mcallii – honors Col. George A. M’Call of the U.S. Army who collected the lizard in the 1850’s.

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