

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

Animal Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Thamnophis eques megalops*

COMMON NAME: Northern Mexican gartersnake, Mexican gartersnake, Northern Mexican garter snake

SYNONYMS: *T. subcarinatus megalops*

FAMILY: Serpentes: Colubridae

AUTHOR, PLACE OF PUBLICATION: *Thamnophis eques* was first described as *Coluber eques* by Reuss (1834). Early misapplication of the name was corrected by Smith (1951). *T. e. megalops* was first described by Kennicott, R. 1860. Proc. Acad. Nat. Sci. Philadelphia 12(1861):331.

TYPE LOCALITY: The type locality of *T. e. megalops* was given as "Tucson, Arizona, or Santa Magdalena, Sonora," but it was later restricted to Tucson (Smith and Taylor 1950; Schmidt 1953).

TYPE SPECIMEN: The syntype is USNM 965, collected by Major Emory and A. Schott, date of collection unknown (Cochran 1961).

TAXONOMIC UNIQUENESS: There are about 19 species in the genus, which ranges from southern Canada to Costa Rica. Three subspecies in *T. eques* but only *megalops* occurs in Arizona (Stebbins 1985).

DESCRIPTION: The stout-bodied Northern Mexican gartersnake reaches a maximum length of 44 in (112 cm), with females larger than males. The background color ranges from olive to olive-brown to olive gray. A portion of the lateral stripe occurring on the fourth scale row, distinguish *T. eques* from other gartersnake species. (USFWS accessed 2011). A pair of large brown spots, extends along the dorsolateral fields, and a light-colored crescent extends behind the corners of the mouth. (Stebbins 1985, USFWS accessed 2011).

AIDS TO IDENTIFICATION: The midstripe separating the blotches behind the head may cause confusion with the black-necked gartersnake (*Thamnophis cyrtopsis*) which is found in the same area. However, the portion of the lateral strip occurring on the fourth scale row distinguished *T. eques* from other gartersnake species (USFWS accessed 2011). *T. e. megalops* is lighter, at least posteriorly, in color; has anterior side stripes on the third and fourth scale rows up from ventrals instead of the second and third; and has a more pronounced crescent-shaped greenish intrusion into the black blotch at the corner of the mouth (Shaw and Campbell 1974).

ILLUSTRATIONS:

Color drawing (Stebbins 1985: plate 42)

Color photo (Behler and King 1979: plate 528)

Color photo (Degenhardt et al. 1996: plate 108)

Color photo (Jeff Servoss, USFWS)

<http://www.fws.gov/southwest/es/arizona/MexGartersnake.htm>).

TOTAL RANGE: Current Range: The species current distribution in Mexico is uncertain; it is likely extirpated from New Mexico. In Arizona, its distribution has been reduced to less than 10 percent of its former range along mainstem rivers. The species is likely extant in fragmented populations within the middle/upper Verde River drainage, middle/lower Tonto Creek, and the Cienega Creek drainage, as well as a small number of isolated wetland habitats in southeastern Arizona. (USFWS accessed 10-31-2011).

Historic Range: Historical distribution in the U.S. included the Santa Cruz, San Pedro, Colorado, Gila, Salt, Agua Fria, Rio Yaqui, and Verde river watersheds in Arizona. In New Mexico, it occupied the upper Gila and San Francisco headwater streams in western Grant and Hidalgo counties. Within Mexico, they historically occurred within the Sierra Madre Occidental and the Mexican Plateau in the Mexican states of Sonora, Chihuahua, Durango, Coahila, Zacatecas, Guanajuato, Nayarit, Hidalgo, Jalisco, San Luis Potosí, Aguascalientes, Tlaxacala, Puebla, México, Michoacán, Oaxaca, Veracruz, and Querétaro. (USFWS accessed 2011).

RANGE WITHIN ARIZONA: *T. e. megalops* occurs in fragmented populations within the middle/upper Verde River drainage (including Oak Creek and the Verde River), middle/lower Tonto Creek, and the Cienega Creek drainage, as well as a small number of isolated wetland habitats in southeastern portions of the state.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: *Thamnophis eques* is active during the warmer months of the year. They may be observed foraging along watercourses, but they are quick to seek shelter in streamside vegetation or in the stream. When threatened, they will flatten their heads and bodies and will strike repeatedly. They will also emit a foul-smelling musk from glands at the base of the tail when handled roughly (Degenhardt et al. 1996). On several occasions at Bubling Ponds Hatchery, Northern Mexican gartersnakes (*T. eques megalops*) have been observed preyed upon by Largemouth Bass (*Micropterus salmoides*) in a holding pond (Young and Boyarski, 2012).

REPRODUCTION: Sexual maturity of the larger females occurs in two to three years, and males in two years. They are ovoviviparous, mating in April and May in the northern distribution, giving birth live birth to between 7 and 26 neonates (average 13.6 inches) in July and August. (USFWS accessed 2011; also Rosen and Schwalbe 1988; Stebbins 1985). There

is a record of a wild-caught female birthing 38 live young, but this record number may have been influenced by the artificially dense prey based afforded by a fish hatchery which served as the habitat for this individual (Nowak and Boyarski, 2012).

FOOD HABITS: *T. e. megalops* requires a stable native prey base. They are surface-active at ambient temperatures ranging from 71° F to 91° F and forages along banks of waterbodies primarily feeding upon native fish (e.g. Gila topminnow, desert pupfish, etc.) and adult and larval native ranid frogs (e.g. lowland leopard frog, Chiricahua leopard frog, etc.). Their diet is also supplemented with earthworm and vertebrates such as small rodents, lizards, salamanders, and hylid frogs (treefrogs); and where they co-occur, on juvenile nonnative bullfrogs and/or bullfrog tadpoles. (Rosen and Schwalbe 1988, USFWS accessed 2011). In 2008 and 2011, snakes were observed near Bubbling Ponds Hatchery, attempting to prey upon nonnative Chinese Mystery Snails (*Cipangopalaina chinensis*). (Herpetological Reviews, 2012). In both instances, the snake's lower jaw had become stuck in the snail. The snake from 2008 died after being run over by a car.

HABITAT: In Arizona, three general habitat types are used: 1) source area ponds and cienegas; 2) lowland river riparian forests and woodlands; 3) upland stream gallery forests. *T. eques megalops* avoids steep mountain canyon stream habitats (Rosen and Schwalbe 1988). It is most abundant in densely vegetative habitat. This snake uses densely vegetated cienegas, cienega streams, and stock tanks in the southern part of its distribution in Mexico and within its historical distribution in New Mexico (USFWS accessed 2011).

ELEVATION: Usually ranges between 3,000 and 5,000 ft (914 - 1525 m) (Rosen and Schwalbe 1988), but may reach elevations of 8,500 feet (2593 m).

PLANT COMMUNITY: Rosen and Schwalbe (1988) documented *T. e. megalops* occupying cienegas, and marsh areas in desert grassland, and occasionally in desert and lower oak woodland habitats.

POPULATION TRENDS: Population numbers are decreasing, with extirpations at several localities since 1950 as habitat is changed and introduced predators invade habitat (Rosen and Schwalbe 1988). It is likely extirpated from New Mexico and its current distribution in Mexico is uncertain. In Arizona, its distribution has been reduced to less than 10 percent of its former range along large mainstem rivers, and is extant in fragmented populations; found in small isolated populations in southeastern portion of state. (USFWS accessed 2011)

Reasons for decline include the following threats: 1) destruction or modification of its habitat; 2) predation from nonnative bullfrogs; significant reductions in its native prey base, from predation/competition associations with nonnative species; and 4) genetic effects from fragmentation of populations caused by the first 3 threats listed. (USFWS accessed 2011).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: LT (USDI, FWS 2014) with Proposed CH
 [C USDI, FWS 2008]
 [C USDI, FWS 2009-2011]
 [None USDI, FWS 1996, 2006]
 [C2 USDI, FWS 1991, 1994]
 [C2 USDI, FWS 1985, 1989]

STATE STATUS: 1, at full species level (AZGFD, AWCS
 2022)
 [1A (AGFD SWAP 2012)]
 [WSC (AGFD, WSCA 1996 in prep)]
 [State Candidate AGFD, TNW 1988]

OTHER STATUS: Forest Service Sensitive (USDA, FS Region
 3 2007, 2013)
 [Forest Service Sensitive USDA, FS Region
 3 1988, 1999]
 A, Determined Threatened in Mexico
 (Proyecto de Norma Oficial Mexicana
 2010)
 [Determined Threatened, Secretaría de
 Medio Ambiente 2000]
 [Listed Rare, Secretaría de Desarrollo Social
 1994]

MANAGEMENT FACTORS: Threats include: 1) destruction and modification of its habitat; 2) predation from nonnative bullfrogs; 3) significant reductions in its native prey base from predation/competition associations with nonnative species; 4) genetic effects from fragmentation of populations cause by the previous three threats listed. (USFWS accessed 2011).

PROTECTIVE MEASURES TAKEN: There is no open season for the take of this species. (Arizona Game and Fish Commission Order 43). This species is protected in Arizona and it is illegal to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect it.

The Northern Mexican Gartersnake was listed as Threatened under the Endangered Species Act in July 2014. Critical habitat has been proposed, but not yet determined.

SUGGESTED PROJECTS: Monitoring of current distribution, habitat use, and population numbers to aid in management of the species. Management should consider cienega restoration and protection, including exotic species control or eradication.

LAND MANAGEMENT/OWNERSHIP: US Fish and Wildlife: San Bernardino NWR; US Forest Service: Coconino, Coronado, and Tonto National Forests; Bureau of Land

Management: Phoenix, Tucson, and Yuma Field Offices; Bureau of Indian Affairs: Fort Apache Reservation; Department of Defense: Fort Huachuca Military Reservation; State Land Department; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

The past range at its northern end has been confused by nomenclature (Black-necked Garter Snake was named *T. eques cyrtopsis*). Much of the earlier literature on this species is found under the names *Eutaenia megalops*, *T. subcarinatus megalops*, or *T. macrostemma megalops* (Degenhardt et al. 1996).

Revised: 1991-03-28 ()
 1995-03-24 (JMH)
 1997-03-06 (SMS)
 1998-01-30 (SMS)

2001-05-02 (RAM)

2011-10-31 (SMS)

2012-07-20 (BDT)

2023-05-03 (MBL)

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