

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

Animal Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Elaphe emoryi* (Baird and Girard, 1853)

COMMON NAME: Great Plains Rat Snake; Prairie Rat Snake; Emory Rat Snake; Western Corn Snake

SYNONYMS: *Scotophis emoryi* Baird and Girard, 1853; *Elaphe guttata emoryi* (Baird and Girard, 1853)

FAMILY: Colubridae

AUTHOR, PLACE OF PUBLICATION: *Elaphe emoryi* (Baird and Girard, 1853), Cat. N. Amer. Rept., Pt. 1, p. 157.

TYPE LOCALITY: Collected at Howard Springs, about 20 miles southwest of Ozona, Crockett County, Texas, by J.H. Clark.

TYPE SPECIMEN: According to Degenhardt et al. (1996), "The type of *E. g. emoryi* was apparently lost from the United States National Museum.... The sex and date of collection are unknown." The collector was J. H. Clark.

TAXONOMIC UNIQUENESS: According to Crother et al. (2003), the systematics of *Elaphe* has changed based on molecular studies conducted by Utiger et al. (2002). Using molecular data, they divided *Elaphe* into eight genera. "New World *Elaphe* are part of a clade outside of Old World species, and *Pantherophis* Fitzinger, 1843, is resurrected for most North American species. The common name would be North American Ratsnakes. Pending further review, we retain the current concept of *Elaphe*.... Burbrink (2002), using molecular data, found *E. guttata* to comprise three clades, which he elevated to species level, restricting *E. guttata* to populations east of the Mississippi River... *Elaphe guttata meahllmorum* was inferred not to be an evolutionary entity, and was synonymized with *E. emoryi*."

DESCRIPTION: *Elaphe emoryi* is a long slender snake that averages lengths between 60-120 cm (24-47 in); maximum total length 180 cm (71 in). Populations are smaller in size in western Colorado where total lengths are usually less than 80 cm (31 in) (Colorado Division of Wildlife 2003). Dorsal color is light gray with brown, dark gray or olive blotches, while the white belly has numerous square-cornered dark marks; the underside of the tail usually has dark stripes. Two stripes on the neck meet on the head to form a "spear-point" or V-shape between the eyes; pupils are round. The upper scales are weakly keeled along the middle of the back. There are 27-29 scale rows at the midbody, and the anal plate is divided. (Degenhardt et al. 1996; Colorado Division of Wildlife 2003; Stebbins 2003). The ventral surface is flat, forming an angle with the

sides, which helps the snake climb (Stebbins 2003). The upper labials are usually 8 but sometimes 9, while lower labials are 12-14. A loreal is present and there is one preocular and two postoculars. (Degenhardt et al. 1996).

AIDS TO IDENTIFICATION: Unlike *Elaphe emoryi*, *Pituophis melanoleucus* (Pinesnake) and *Nerodia erythrogaster* (Plain-bellied Watersnake) have strongly keeled scales, *Lampropeltis* spp. (Kingsnake) and *Arizona elegans* (Glossy Snake) have a single anal plate and smooth scales, and the young of *Coluber constrictor* (Eastern Racer) and other *Elaphe* spp. (Ratsnake), if blotched, do not have the characteristic spearpoint between the eyes (Degenhardt et al. 1996).

ILLUSTRATIONS:

Color drawing (Stebbins, 2003: p. 348, map 148)

Color photo (Behler and King, 1979: p. 604, plate 570, 508)

Color photo (D.Cannatella, www.zo.utexas.edu/research/txherps/snakes/alaphe.emoryi.html.)

Color photo (Suzanne L. Collins 2001, CNAH <http://www.cnah.org/detail.asp?id+123>)

Color photo (Alan D. St. John, in Utah Division Wildlife Resources accessed 3/28/2007 from <http://dwr.cdc.nr.utah.gov/rsgis2/Search/Display.asp?F1Nm=elapgutt>)

Color photos (Colorado Division of Wildlife 2003, <http://ndis.nrel.colostate.edu/herpatlas/coherpatlas/>)

TOTAL RANGE: Ranges from southwestern Illinois west to Colorado and southwest through Texas to New Mexico and Mexico (Powell et al. 1998). A disjunct population occurs in west-central Colorado and adjacent eastern Utah; likely also in extreme northwestern Colorado. Reported from northern Arizona, but not confirmed.

RANGE WITHIN ARIZONA: Reported to occur in the state, but this has not been confirmed. The closest observations to Arizona are in eastern Utah, thus surveys in northern Arizona should be conducted to confirm or rule out its presence in the state.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: *Elaphe emoryi* is primarily nocturnal, especially during warm weather, where they often can be found along highways. During daytime hours, they remain under cover of rocks, logs, surface debris or in crevices, rodent burrows, and caves. They are very secretive but when caught they tend to void feces and the content of their anal scent glands. They also may bite and vibrate their tail when annoyed, which when found in a pile of leaves may sound like the tail of a rattlesnake. They are nonvenomous, killing their prey by constriction.

REPRODUCTION: The species is oviparous. Throughout its range the reproductive season generally runs from May through July. Eggs are laid 30-40 days after fertilization, are white, smooth-shelled, and usually adhesive. Females lay a clutch of 3-37 eggs (up to 16 more common); UNR (2007) reports clutch size of 10-12; clutch size may be related to food intake.

Young hatch in about eight to ten weeks. Hatchlings range in size from 10-15 inches in length. Breeding in females probably does not begin until their third year. (Degenhardt et al. 1996).

FOOD HABITS: Eat small mammals (e.g. rodents, bats), small birds and their eggs, lizards and frogs, which they usually kill by constriction (Stebbins, 2003).

HABITAT: Occurs in a variety of habitat. Usually found in grasslands, prairies to deserts and thornbrush habitats; may also be seen in mountainous areas (TMM@UTA 2000). The Colorado Division of Wildlife (2003), reports that it is "Closely associated with river valleys, stream courses, and canyon bottoms; inhabits grassland, weedy areas, shrubland, plains shelterbelts, open conifer woodlands, lowland riparian zones, and semiagricultural and rural residential areas (especially rodent-infested outbuildings) but usually does not venture far from a permanent or intermittent stream or arroyo."

ELEVATION: Generally below 6,000 feet (1830 m) elevation. Stebbins (2003) elevation range includes both the western (*E. emoryi*) and eastern species (*E. guttata*): sea level to around 7,218 ft. (2,200 m).

PLANT COMMUNITY: Occupies several vegetation types in the vicinity of streams and river valleys throughout its range. In Arizona, most likely to found on the Colorado Plateau in the vicinity of Utah in similar habitat.

POPULATION TRENDS: Unknown. In Colorado, generally uncommon.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:	None
STATE STATUS:	None
OTHER STATUS:	Wildlife Species of Concern in Utah (UNR, 1997, 2006).

MANAGEMENT FACTORS: None in Arizona.

PROTECTIVE MEASURES TAKEN: None

SUGGESTED PROJECTS: Comprehensive surveys to determine presence of populations in Arizona.

LAND MANAGEMENT/OWNERSHIP: Unknown.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Behler, J.L. and F.W. King. 1979. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A. Knopf. New York. Pp. 604-605.
- Beltz, E. 2006. Scientific and Common Names of the Reptiles and Amphibians of North America – Explained. <http://ebeltz.net/herps/etymain.html#Snakes>. Accessed: 3/28/2007.
- [BISON-M] Biota Information System of New Mexico. 2007/03/13 <http://www.bison-m.org/booklet.aspx?id=030245>. Accessed 2007/03/13.
- Colorado Division of Wildlife: Colorado Herpetofaunal Atlas. 2003. Great Plains Rat Snake, *Elaphe guttata* or *Elaphe emoryi*, [online]. Accessed: 3/28/2007. <http://ndis.nrel.colostate.edu/herpatlas/coherpatlas/>.
- Crother, B.I. et al. 2001 (2003 update). Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding. J.J. Moriarty, Editor, SSAR, Herpetological Circular No. 29. 82pp.
- Degenhardt, W.G., C.W. Painter and A.H. Price. 1996. Amphibians and Reptiles of New Mexico. University of New Mexico Press. Albuquerque, New Mexico. Pp. 279-271.
- Herpscope. The Great Plains Rat Snake, *Elaphe emoryi* (online). Accessed: 3/28/2007. <http://www.herpscope.com/cgi/herpguide.cgi?>
- Integrated Taxonomic Information System (ITIS). Retrieved 3/13/2007 from ITIS, <http://www.itis.usda.gov>.
- NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: February 21, 2007).
- Powell, R., J.T. Collins and E.D. Hooper, Jr. 1998. A Key to Amphibians and Reptiles of the Continental United States and Canada. University Press of Kansas. Lawrence, Kansas. Pp. 113, 115.
- Snakes of Louisiana. *Elaphe guttata*-Corn Snake. Accessed 3/16/2007. Available http://www.kingsnake.com/louisiana/species_corn_snake.htm.
- Stebbins, R.C. 2003. Peterson Field Guides, Western Reptiles and Amphibians. Third Edition. Houghton Mifflin Company. New York. Pp. 358-359.
- Utah Natural Resources, Division of Wildlife Resources. Utah Sensitive Species List. October 17, 2006. Available at <http://dwrcdc.nr.utah.gov/ucdc/ViewReports/sslist.htm>.
- Utah Natural Resources, Utah Division of Wildlife Resources. Cornsnake, *Elaphe guttata*. <http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp@F1Nm=elapgutt>. Accessed: 3/28/2007.
- The Center for North American Herpetology. *Elaphe emoryi*- Great Plains Rat Snake. Accessed 3/13/2007. Available <http://www.naherpetology.org/detail.asp?id=123>.
- Wikipedia. "Great Plains Rat Snake," Wikipedia, The Free Encyclopedia. Available <http://en.wikipedia.org/w/index.php?title=Special:Cite&page=GreatPlainsRatSnake&id=111737005>. (Accessed 20 March 2007).

MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

Translation and Original Description of Scientific Name (Beltz 2006):

Elaphe: Greek – *elaphos* for deer, which is a misnomer; presumed for swiftness.

emoryi: New Latin – honors William H. Emory (1811-1887) *Elaphe guttata emoryi* (Baird and Girard, 1853) and *Trionyx spiniferus emoryi* (Agassiz, 1857).

- 1831 Graduated, US Military Academy, West Point.
- 1831-1836 Stationed at sea ports.
- 1836-1838 On duty in the Creek Nation.
- 1838 Commissioned 1st Lt., Topographical Engineers.
- 1838 Married Matilda Wilkins Bach, great-granddaughter of Benjamin Franklin.
- 1844-1846 Served as principle assistant on Northeastern Boundary Survey between US and Canada.
- 1846 Emory's Reconnaissance from Fort Leavenworth to San Diego. A formidable caravan followed. One census reports 1556 wagons and nearly 20,000 oxen, "beeves," horses and mules all slogging through the worst deserts of the trail. There was little grass or water and the temperatures reached 120 degrees F.
- Chief Engineering Officer and Acting Assistant Adjutant General, Army of the West, Mexican War.
- 1847-1848 US/Mexican Boundary Survey, Major, US Army Corps of Topographical Engineers.
- 1848-1853 Chief Astronomer for California/Mexican Boundary Survey.
- 1853 Collected mammals for Smithsonian along Rio Grande.
- 1861 Commanded troops in Indian Territory.
- 1862 Appointed Brigadier General.
- 1865-1866 Commanded the Department of WV.
- 1869-1871 Commanded the Department of Washington.
- 1871-1875 Commanded the Department of the Gulf.
- 1876 Retired the Army as a Brigadier General after 45 years of service.

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