ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** ARADE02123
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Crotalus oreganus concolor*
COMMON NAME: Midget faded rattlesnake
SYNONYMS: *Crotalus concolor Woodbury, Crotalus viridis concolor*
FAMILY: Viperidae

AUTHOR, PLACE OF PUBLICATION: Woodbury, 1929, Bull. Univ. Utah, Vol. 20, No. 6, p. 3, figs. 1-2.

TYPE LOCALITY: Unknown.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: There are nearly 30 species in the genus *Crotalus*, six subspecies of *C. oreganus*, four of which are found in Arizona, including the Grand Canyon Rattlesnake (*C. o. abyssus*), the Great Basin Rattlesnake (*C. o. lutosus*), the Arizona Black Rattlesnake (*C. o. cerberus*), and the Midget Faded Rattlesnake (*C. o. concolor*).

DESCRIPTION: The Midget Faded Rattlesnake is the smallest of the subspecies *C. oreganus*, generally reaching a maximum length of 16 to 26 inches (41-66 cm.), although one report from Moab, Utah described an individual that was 36 in. (91cm), (Brennan 2006; Brennan & Holycross 2006; Stebbins 2003; Parker, accessed 2007); newborns average about 8.5 in (21.5 cm), (Parker, accessed 2007). They typically exhibit a light tan, cream or gray ground color, but may infrequently present yellow or salmon shades (Stebbins 2003). The oval-shaped splotches that run down the length of the body are usually faded or absent in adults while juveniles have darker, better defined markings on their head and body. Visible markings tend to be small spherical shapes with same colored (or only slightly darker than) centers than the background color and are outlined by a thin dark brown or black line. A dark stripe lined in a light color can often be seen on the head, extending from behind the eye and back to the corner of the mouth. Young have prominent blotches and distinct head and facial markings. For the species, the neck is slender and the head is broad and triangular; pupils are vertically elliptical and the dorsal scales are keeled. The 'rattle' on the end of the tail is composed of a series of loosely interlocking keratinous sections. A new section is added each time the snake shed its skin. (Brennan 2006).

AIDS TO IDENTIFICATION: Although similar to *C. viridis*, *C. oreganus* are now considered a separate species based on DNA sequence data (Ashton & de Queiroz 2001).

Midget Faded Rattlesnakes are known for having venom which is considered to be more potent than any other Western rattlesnake species due to the presence of a definitive neurotoxin. Specifically, they carry the presence of a phospholipase A2-based B-neurotoxin (concolor toxin) and several myotoxins which makes *concolor* venoms highly toxic. (Mackessy et al. 2003). *C. oreganus* usually has 4 or more internasals touching the rostrum (Brennan & Holycross 2006), keeled scales that typically number 23 or 25 scale rows at mid-body (Stebbins 2003) and a single anal plate (Travsky & Beauvais 2004).

ILLUSTRATIONS:

Color photo (M.J. Feldner 2003, *in* http://www.reptilesofaz.com/Snakes-Subpages/h-c-oreganus.html)
Color Photos (T.C. Houston 2005, *in* http://www.venomousreptiles.org/articles/213)
Color Photo (Brennan & Holycross 2006, p. 129)
Color Photo (NPS 2006, http://www.nps.gov/care/faqs.htm)
Color Photo (G.A. Hammerson, *in* http://ndis.nrel.colostate.edu/wildlifespx.asp?SpCode=030901)
Color photo (Suzanne L. Collins 2001, http://www.cnah.org/detail.asp?id=91)
Color photo (Utah Division of Wildlife Resources, http://dwrcdc.nr.utah.gov/rsgis2/Search/Display.asp?F1Nm=crotvico)

TOTAL RANGE: Midget Faded Rattlesnakes occur throughout much of the Green River Formation of southwestern Wyoming, western Colorado and eastern Utah (Caggiano 2000). These snakes have also been found in a small part of extreme north-central Arizona near the border with Utah.

RANGE WITHIN ARIZONA: Although rare, Midget Faded Rattlesnakes may be found in a small section of Coconino County near the central Utah – Arizona border. Their historic range in Arizona is presently inundated by the Powell Reservoir (Brennan 2006).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY/LIFE HISTORY: Midget Faded Rattlesnakes is a mild-tempered snake that resides in high, cold desert environments where arid grasslands are often dominated by sagebrush and juniper (Mackessy, etal. 2003; Travsky & Beauvais 2004). They may be found on or near steep, rocky canyon walls where outcrops can be used as predator protection, thermal cover and hibernacula (Brennan 2006). Denning is common for these rattlesnakes, and groups of up to 100 individuals have been noted (Travsky & Beauvais 2004). The active season occurs during the highest temperatures of the summer, usually July and August, when these rattlesnakes will use the adjacent high plains and area foothills of sagebrush to search for food. (Travsky & Beauvais 2004). They locate warm-blooded prey using a temperature-sensitive structure on the side of their heads called a 'pit'. Toxic venom is administered to the prey through their fangs. Their life span averages 10 to 20 years, with predators (besides

man) including king snakes, racers, whip snakes, coyotes, foxes, wildcats, badgers, and birds of prey (Utah's Hogle Zoo, 2005). Because they shed their skin 3 to 4 times per year on average, it is unusual to see more than 12 rattles.

Midget Faded Rattlesnakes spend much of the year hibernating, but in early May they begin to emerge. If a female is gravid, she will typically not venture more than 20 m from the den site. However, males and non-gravid females may or may not migrate from the hibernacula in search of food (there are conflicting reports on this information in the resources used by this author). (Ashton 2003; Ashton & Patton 2001; Brennan & Holycross 2006; Mackessy, et al. 2003; Travsky & Beauvais 2004). According to Parker and Anderson (2007), they report movement and activity ranges for this snake in Wyoming were among the largest reported for rattlesnakes. "Minimum convex polygon area was 117.8 ha for males, 63.9 ha for nongravid females, and 4.8 ha for gravid females. Mean distances traveled per year were 2122.0 m for males, 1956.0 m for nongravid females, and 296.7 m for gravid females."

REPRODUCTION: Generally, the Midget Faded Rattlesnake reproduces at a slow rate as compared to its conspecifics. For most Midget Faded Rattlesnakes, the reproduction frequency is triennial, meaning that offspring are produced only once every 3 years. Rare cases have shown that females may experience biennial or quadrennial reproduction cycles, giving birth every 2 years or every 4 years, respectively. These rattlesnakes may produce 3-4 young on average per clutch, although a rare few have been known to produce up to 7 young per clutch. Young are usually born in July and August, but parturition may extend into early September. The age at which these snakes reach sexual maturity typically occurs between the ages of 5 and 10 years, although it is believed to be closer to 10.

FOOD HABITS: Midget Faded Rattlesnakes are a member of the family Viperidae, known as pit vipers because they have a bladder in the back of the head that contains venom, which they use to paralyze their prey. However, this technique can also serve as a defense mechanism. The venom is delivered by small grooves in retractable fangs that act as a syringe to inject the neurotoxin into its victim, resulting in death to its prey. The injected venom also acts to begin the digestion process (Brennan 2006). These rattlesnakes are not known to be aggressive and will not bite a human unless provoked.

As adults, Midget Faded Rattlesnakes prefer to consume rodents, while juveniles eat mainly lizards. However, these snakes may also include additional animals in their diet such as other small mammals and birds (Brennan 2006; Mackessy 2003). In a three-year study conducted in Wyoming by Parker and Anderson (2007), their primary diet was lizards (associated with rock outcrops), though they will consume small mammals and birds.

HABITAT: Steep, rocky canyon slopes where cover is easily had from various outcroppings along the canyon walls. "They tend to prefer rocky outcrops in areas where sage is the abundant vegetation" (Houston 2005).

ELEVATION: Usually found at 7000 ft or below (Travsky & Beauvais 2004).

PLANT COMMUNITY: The landscape inhabited by Midget Faded Rattlesnakes is typically dominated by coniferous woodlands made up mostly of pinyon (*Pinus spp.*) and juniper (*Juniperus spp.*) trees, and semi-desert shrubland consisting of shrubs such as sagebrush (*Artemisia spp.*) and fourwing saltbush (*Atriplex canescens*). Perennial and annual grasses of many sorts are also found in these areas. (USFS & UA 2001). In Wyoming, it inhabits sagebrush desert areas.

POPULATION TRENDS: Unknown. Rare, native species that is commonly occurring year-round within its range. According to Parker (accessed 2007), they "exist in very small isolated populations focused around den sites which have been estimated to include between 1 and about 25 individuals"

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.
STATE STATUS: Colorado - S
OTHER STATUS: S - BLM (Colorado and Wyoming)

MANAGEMENT FACTORS: In their range, the *C. o. concolor* is threatened by unregulated collection by reptile enthusiasts, increased mineral exploration, and ATV use, which will bring this snake into more frequent contact with people and motor vehicles, which will increase snake mortality (NatureServe 2006).

PROTECTIVE MEASURES TAKEN: Federal Lacy Act. Also illegal to transport wild caught animals across state lines in all states where they range, except Arizona.

SUGGESTED PROJECTS: Thorough surveys of its limited range in Arizona. Survey and monitor population distribution status and habitat trends; Research critical life history and habitat information needs; Determine the impacts of unregulated collection has on the small population in Arizona.

A reassessment of man-made reservoirs and dams should be made. There is global evidence that endemic species loss occurs while an increase of invasive species can be seen as a result of dams and reservoirs (Gujja & Hunziker 2000). Both aquatic and terrestrial animals are affected by human altered stream flow (McCully 2002) changing the natural ecosystem of the area throughout the entire floodplain.

LAND MANAGEMENT/OWNERSHIP: NPS – Glen Canyon National Recreation Area.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

Scientific Name:

Crotalus: Greek – *krotalon*, rattle on tail.

concolor: Latin – of the same colors.

Revised: 2007-02-16 (TFH)
2007-03-30 (SMS)

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