

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

Animal Abstract

Element Code: ARADE02132

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Crotalus willardi willardi*

COMMON NAME: Arizona Ridge-nosed Rattlesnake

SYNONYMS:

FAMILY: Serpentes: Viperidae

AUTHOR, PLACE OF PUBLICATION: Meek, S.E. 1905. Field Mus. Zool. Ser. 7(1):18.

TYPE LOCALITY: Above Hamburg, middle branch of Ramsey Canyon, Huachuca Mountains, ca. 7000 ft, Cochise Co., Arizona (Swarth 1921).

TYPE SPECIMEN: FMNH 902, F.C. Willard.

TAXONOMIC UNIQUENESS: Approximately 30 species in genus. Of the five subspecies of *willardi*, *C. w. willardi* and *C. w. obscurus* occur in Arizona.

DESCRIPTION: The Arizona Ridge-nosed Rattlesnake is a small mountain rattlesnake, up to 64 cm (25 in) total length, but most specimens are smaller (Stebbins 1985). The body pattern consists of large brown or red-brown patches separated by narrow, light cross bands. The underside is creamy to white and often stained or mottled with dark to reddish brown (Lowe et al. 1986). Young *C. w. willardi* may have yellowish tails (Martin 1975; Lowe et al. 1986), fading to an olive gray or brown soon after the second shed.

C. willardi has 18-45 dorsal blotches that are deep chestnut or dark brown and are usually edged on the anterior and posterior margins with dark brown or black pigment (Degenhardt et al. 1996). The belly becomes progressively darker posteriorly (Degenhardt et al. 1996). Subcaudal scales are pinkish, reddish, or orangish with irregular dark markings (Campbell and Lamar 1989). *C. willardi* has 23-31 rows of keeled scales at mid-body (Degenhardt et al. 1996). Males have 140-156 ventrals and 24-36 subcaudals; females have 146-160 ventrals and 21-32 subcaudals (Barker 1991). Males have tails 9.1-11.5% of SVL; females only 7.9-9.8% of SVL (Degenhardt et al. 1996). There are 1-3 loreals, 2-3 preoculars, 3-4 postoculars, and 13-14 (12-17) upper and lower labials (Ernst 1992).

AIDS TO IDENTIFICATION: *C. willardi* is easily recognized by the unique ridge of upturned scales on the tip of the snout between the nostrils; most have bold white stripes on the brown to russet face (Lowe et al. 1986). *C. willardi willardi* has a vertical white stripe present on the rostral and mental scales; this is absent and the lateral facial stripes are faded or absent in *C. w. obscurus* (Ernst 1992).

ILLUSTRATIONS:

Color drawing (Stebbins 1985: plate 45)

Color photo (Behler and King 1979: plate 643)

Color photo (Lowe et al. 1986: page 73)

Color photo (Campbell and Lamar 1989: figure 431)

Color photo (Ernst 1992: plate 54)

Color photo:

http://www.azgfd.gov/i_e/ee/resources/state_symbols/ridgenosed_rattlesnake.pdf.

Color photo: <https://tucsonherpsociety.org/inhabitants/ridge-nosed-rattlesnake/>.

Color photo:

<http://www.californiaherps.com/noncal/southwest/swsnakes/pages/c.w.willardi.html>.

Color photo: <http://southwesternherp.com/snakes/willardi.html>.

TOTAL RANGE: *C. willardi* occurs from south central Arizona and southwestern New Mexico, south to Durango and Zacatecas (Lowe et al. 1986). *C. w. willardi* occurs in south central Arizona and extreme northern Sonora (Stebbins 1985).

RANGE WITHIN ARIZONA: The Arizona Ridge-nosed Rattlesnake occurs in extreme southeastern Arizona, in the Huachuca, Santa Rita, Canelo, Patagonia, and Whetstone mountains and the Canelo Hills (Thirckhill and Starrett 1992; McCrystal et al. 1996). The species possibly remains undetected in the Mule, Dragoon, or Chiricahua mountains (Holycross and Douglas 1997).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Ridge-nosed rattlesnakes are generally secretive and inconspicuous; when encountered they are more likely to rattle and attempt to escape rather than coil and strike (Degenhardt et al. 1996). Primarily diurnal but it is occasionally crepuscular when conditions are favorable and is occasionally active into the night at lower elevations (Brennan and Holycross 2006 and 2016). It hibernates during the cold months of late fall and winter. Individuals from Sierra San Luis were found hibernating 40-46 cm (16-18 in) deep in talus slopes and observed basking at air temperatures of 6-9°C (43-48°F; shade) and 26°C (79°F; sun) (Degenhardt et al. 1996). The paleogeography and evolution of *C. willardi* complex were described by Harris and Simmons (1976). Morphology and biochemical characteristics of the *C. willardi* complex were described by Barker (1992).

REPRODUCTION: Mating occurs in midsummer to early fall. Brood size averages about 5.5 young (2-9), with the young born from late July through late August (Holycross and Goldberg 2001). Female reproduction is typically biennial or longer (Holycross and Goldberg 2001). The shortest reproductively active specimens measured 402-406 mm (16 in) snout-vent length for females and males, respectively (Holycross and Goldberg 2001). Tryon (1978) provides the best description for courtship and mating behavior for *C. w. willardi*.

FOOD HABITS: The Arizona Ridge-nosed Rattlesnake preys on various rodents, lizards, snakes, birds, and arthropods, including centipedes (*Scolopendra heros*) (Lowe et al. 1986; McCrystal et al. 1996). In a study on *C.w. obscurus* (Holycross et al 2002), juvenile diets consisted of lizards (57%) and centipedes (33%), while adults preferred small mammals (62%), lizards (26%) and passerine birds (9%).

HABITAT: In Arizona, *C. w. willardi* occurs in oak woodland to pine-fir forests, near rock crevices on forest and woodland floors, also (especially) mesic canyon bottoms with canopies of alder, box elder, maple, oak and other broadleaf deciduous trees; it is infrequently found in high grassland bordering the woodlands (Lowe et al. 1986).

ELEVATION: *C. w. willardi* is found at elevations of 4,800-9,000 ft (1463-2743 m) but most often 5,400-7,500 ft (1646-2286 m) (Lowe et al. 1986).

PLANT COMMUNITY: *C. w. willardi* has been described as a montane generalist (Lowe et al. 1986) but is primarily a denizen of pine-oak woodland.

POPULATION TRENDS: Population trends are unknown. A “general feeling” exists that it may be less common locally in the Huachuca Mountains than 25 years ago. It is considered imperiled in Arizona by NatureServe.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[3C USDI, FWS 1989]
[3C USDI, FWS 1985]

STATE STATUS: 1 (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 1999, 2013)
PR, Determined Subject to Special Protection in Mexico (NORMA Oficial Mexicana NOM-059-SEMARNAT-2010)
[Determined Subject to Special Protection Secretaria de Medio Ambiente 2000]
[Secretaria de Desarrollo Social 1994]

MANAGEMENT FACTORS: Arizona Ridge-nosed Rattlesnake is threatened by illegal collecting, mining, recreational development, and woodcutting (Lowe et al. 1986), and from occasional and indiscriminate killing. Wildfires may also be potentially harmful and fire regimes have changed over the years.

PROTECTIVE MEASURES TAKEN: This snake is protected in Arizona. It is against Arizona State law to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect *Crotalus willardi* or to attempt to engage in any such conduct (Arizona Game and Fish Commission Order 43).

SUGGESTED PROJECTS : Determine presence/distribution within the Mule, Dragoon, and Chiricahua mountains (Holycross and Douglas 1997). Habitat, population and life history studies are needed.

LAND MANAGEMENT/OWNERSHIP: US Forest Service: Coronado National Forest; Department of Defense: Fort Huachuca Military Reservation; The Nature Conservancy: Ramsey Canyon Preserve.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION: The Arizona Ridge-nosed Rattlesnake is the official State Reptile of Arizona.

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