

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

**Animal Abstract**

**Element Code:** ARADB05013

**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Chionactis annulata*

**COMMON NAME:** Resplendent Shovel-nosed Snake, Resplendent Desert Shovel-nosed Snake

**SYNONYMS:** *Lamprosoma annulatum*, *Chionactis saxatilis*, *Chionactis occipitalis annulata*, *Chionactis occipitalis klauberi*

**FAMILY:** Colubridae

**AUTHOR, PLACE OF PUBLICATION:** S.F. Baird, 1859, in W.H. Emory, Report on the United States and Mexican Boundary Survey. Vol. 2, Rept., Pt. 2, p. 22, pl. 21.

**TYPE LOCALITY:** “Colorado Desert”

**TYPE SPECIMEN:** USNM 2105, 2106. Schott, Arthur C.V.

**TAXONOMIC UNIQUENESS:** One of three species in the genus *Chionactis*, all of which occur in Arizona. *C. annulata* is comprised of two subspecies, *C. a. annulata*, the Colorado Desert Shovel-nosed Snake, and *C. a. klauberi*, the Tucson Shovel-nosed Snake. Previously, *C. annulata* was considered a subspecies of *C. occipitalis*, but was elevated to a full species on the basis of morphological and genetic data (Wood et al. 2014).

**DESCRIPTION:** This is a small snake of medium girth. Most individuals measure 22-32 cm (8.7-12.6 in) in snout-vent length, and the maximum total length for the species is 45 cm (17.7 in) (Funk 1967, Klauber 1951, Rosen and Lowe 1996). The ground color is cream or yellowish, with narrow black bands; usually less than 45 bands but more than 17. The posterior black bands usually completely encircle the body but the anterior bands do not. Well-defined orange to red saddles are present between black bands in most populations, though these saddles are faint to absent in populations from the Pinta Sands and just south of the Bill Williams River (Holycross and Mitchell 2020). A black band crosses the top of the head and curves downwards towards the eyes, creating a crescent shape (Wood et al. 2014). This species can be quite variable in pattern and coloration (Holycross and Mitchell 2020). The scales are smooth, shiny and not keeled; the dorsal scales are usually in 15 rows at the mid-body. The head (which is only slightly distinct from the neck) is narrow with a large spade-like scale on the tip of a flat shovel-like snout and is flat and beveled from parietals to snout. The pupils are round. The internasals are not separated by the rostral. The anal plate is divided. A deeply inset jaw, nasal valves, and a flap-like protrusion of the mental scute that occludes the lingual fossa are adaptations to the arenicolous existence of this snake (Behler and King 1979, Stebbins 2003, Brennan 2006, Brennan and Holycross 2006, Holycross and Mitchell 2020).

**AIDS TO IDENTIFICATION:** *Chionactis occipitalis* has brown primary bands, lacks the orange or red saddles, and a dark head crescent that engages more of the posterior edge of the frontal scale (Wood et al. 2014). *Chionactis palarostris* has 21 black primary bands and a more convex snout (Holycross and Mitchell 2020). *Micruroides euryxanthus* has a black snout and red bands which fully encircle the body. *Chilomeniscus cinctus* has 13 scale rows at the midbody, and the rostral separates the internasals. *Sonora semiannulata* usually has dark pigment at the base of most of the dorsal scales, and does not have a deeply inset jaw or nasal valves (Stebbins 2003, Holycross and Mitchell 2020).

**ILLUSTRATIONS:**

- Color photos (Behler and King 1979: plates 604 and 612)
- Color drawing (Stebbins 1985: plate 38. 2003: plate 45)
- Color photo (Brennan and Holycross 2006: p. 99)
- Color photos (Holycross and Mitchell 2020: p. 109, pp. 111-115)

**TOTAL RANGE:** In Mexico, northeastern Baja California to northwestern Sonora. In the United States, found in the Colorado Desert of southern California and much of the Sonoran Desert in southwestern Arizona (Holycross and Mitchell 2020).

**RANGE WITHIN ARIZONA:** Below the Mogollon Rim and south of the Bill Williams River from the Colorado River east to the vicinities of Paradise Valley, Florence Junction, and the Avra Valley (La Paz, Maricopa, Pima, Pinal, Yavapai, and Yuma counties).

**SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** The Resplendent Shovel-nosed Snake spends most of its time beneath the surface in loose substrate mediums or burrows (Holycross and Mitchell 2020). The species is an accomplished “sand-swimmer,” moving freely about 2-6 cm below the surface or moving across surface when moving long distances (Mosauer 1932, Klauber 1951). Adaptations that allow for a quick swimming movement (“sand swimming”) through loose sand, with an s-shaped, side-to-side movement includes smooth scales, flat snout (inset lower jaw), concave abdomen, and nasal valves. The angular, concaved abdomen is also thought to reduce slippage when crawling on surfaces. Most surface activity occurs in the spring and appears to decrease substantially after summer rains begin in early July, though collections have been made throughout the year in Arizona (Klauber 1951, Rosen et al. 1996). Primarily crepuscular in surface movements, this species is inactive in cold temperatures and extreme heat. (Holycross and Mitchell 2020). This snake is preyed upon by a variety of predators including foxes, raptors, shrikes, leopard lizards, and other snakes (Holycross and Mitchell 2020). When threatened, this snake strikes repeatedly from a loose defensive coil, and may void feces when handled. Similar to *C. occipitalis*, *C. annulata* may be immune or highly resistant to scorpion venom (Norris and Kavanau 1966). The snake uses grooved rear teeth to chew venom into prey (Rosen 2003).

**REPRODUCTION:** It is believed that mating activity in this species peaks from April to June, corresponding with peak surface activity (Goldberg and Rosen 1999). Males likely engage in combat during the breeding season (Holycross and Mitchell 2020). Only a portion of the female population appear to mate each year (Goldberg 1997). Oviposition and egg-laying sites have not been found in the wild, but eggs are likely laid in late spring and early summer (Ernst and Ernst 2003, Stebbins 2003). Average clutch size is estimated as 2-4 eggs or 2-5 eggs, (Klauber 1951, Wright and Wright 1957, Goldberg 1997, Stebbins 2003, Ernst and Ernst 2003).

**FOOD HABITS:** Actively forage for desert arthropods. Native roaches, larval and pupal insects, and scorpions are regularly eaten, though reptile eggs are occasionally consumed (Holycross and Mitchell 2020).

In a feeding behavior study of *Chionactis annulata klauberi* conducted by J.K. Glass (1972), the “size of food accepted ranged from a termite (4 mm) to a cricket (32 mm). Soft-bodied invertebrates were preferred over hard-bodied prey although three hard bodied Junebugs were eaten. Prey were subdued by one of two means: One method, which was to strike and grasp with the mouth, usually associated with the vertical stance form of pursuit. The other method, usually following horizontal pursuit, was ‘looping’, i.e. throwing the anterior third of the body in a single loop over the prey and pressing it against the substrate or some object. The snake then seized the prey with its jaws.”

**HABITAT:** Sonoran Desert, in intermontane valleys in the Lower Colorado River Valley subdivision and on lower bajas of the Arizona Upland subdivision, especially along sandy washes and xeroriparian habitats. Frequently associated with sandy washes, dunes, dune edges, sandy flats, loose soil, and rocky hillsides where there are sandy gullies or pockets of sand among rocks, often with little vegetation. Appears to be strongly associated with Quaternary to Holocene alluvial and eolian surficial deposits consisting of sand, silt, clay, and fine-grained sediment in valley plains and playas (Holycross and Mitchell 2020).

**ELEVATION:** In Arizona, from near sea level to 750 meters (2460 ft) (Holycross and Mitchell 2020).

**PLANT COMMUNITY:** Lower Colorado River Sonoran Desertscrub. Usually found in association with sandy washes or dunes in the desert flats or on gently sloping bajadas, often with little vegetation. (Brennan 2006). Associated vegetation includes Big galleta (*Hilaria rigida*), blue palo verde (*Parkinsonia florida*), creosote bush (*Larrea tridentate*), ironwood (*Olneya tesota*), mesquite (*Prosopis* spp.), triangle-leaf bursage (*Ambrosia deltoidei*), and white bursage (*Ambrosia dumosa*) (Holycross and Mitchell 2020).

**POPULATION TRENDS:** Unknown. Occur at densities similar to or exceeding those of common syntopic lizards and snakes in some habitats (Rorabaugh 2002, Jones et al. 2011, Sullivan et al. 2017), but are believed to be extirpated from the developed areas of the Phoenix and Tucson metropolitan areas (Rosen 2003).

**SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** None  
**STATE STATUS:** None (AZGFD AWCS 2022)  
[1C (AGFD SWAP 2012)]  
**OTHER STATUS:** None

**MANAGEMENT FACTORS:** Urban sprawl and agricultural development are a threat to the species (Sullivan et al. 2017).

**PROTECTIVE MEASURES TAKEN:**

**SUGGESTED PROJECTS:** Annual surveys for distribution and trend information.

**LAND MANAGEMENT/OWNERSHIP:** Unknown.

**SOURCES OF FURTHER INFORMATION****REFERENCES:**

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**MAJOR KNOWLEDGEABLE INDIVIDUALS:**

- Dr. Cecil R. Schwalbe – USGS Coop, University of Arizona, Tucson.  
Tom R. Van Devender - Arizona Sonoran Desert Museum, Tucson, Arizona.  
Andrew T. Holycross – Arizona State University, Tempe.

**ADDITIONAL INFORMATION:**

The genus name *Chionactis* is Greek, where *chion* means snow and *aktis* means ray or beam. The species name *annulata* is Latin meaning ringed, referring to the banded body. (Holycross and Mitchell 2020).

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