ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** ARADA01020
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Lichanura trivirgata*
COMMON NAME: Three-lined Boa
SYNONYMS: *Lichanura trivirgata gracia*, *Lichanura trivirgata trivirgata, Charina trivirgata*
FAMILY: Charinidae

AUTHOR, PUBLICATION: Cope, E.D. 1861. Contributions to the ophiology of Lower California, Mexico, and Central America. Proceedings of the Academy of Natural Sciences of Philidelphia 13:292-306.

TYPE LOCALITY: "Cape San Lucas, Baja California," Mexico (Smith and Taylor 1945).

TYPE SPECIMEN: USNM 15502, Collected by Xantus in September 1859 (Previously USNM 5023).

TAXONOMIC UNIQUENESS: Two species occur in the genus, both occurring in Arizona. Taxonomy of the genus has been contested, with the genus being considered monotypic by some authorities and comprised of two to three species by others (Holycross and Mitchell 2020). Recently, Wood et al. (2008) recommended recognition of two species in *Lichanura* based upon phylogenetic analysis of mitochondrial DNA sequence data and preliminary morphological character concordance. This taxonomic arrangement has been supported by the Integrated Taxonomic Information System (ITIS 2021) and Holycross and Mitchell (2020).

DESCRIPTION: Short, stout snake, with a stubby tail and head not much wider than neck. Maximum length has not been reported for this species, though the closely related *L. roseofusca* may reach 45 inches (114 cm) (Boundy 1995, Wright and Wright 1957). Small spurs are found lateral to the cloaca in males and are sometimes present, though reduced, in females (Holycross and Mitchell 2020). The eyes are small and the pupils vertical. Tail length averaged 18.2% of SVL for males and 14.9% of SVL for females in small samples (6 total snakes) from Organ Pipe Cactus National Monument (Parizek et al. 1996).

In Arizona populations one middorsal and two lateral strpes run the length of the body from the head to the tip of the tail. These stripes are dark chocolate-brown to black and 2-6 scale rows wide, with even or evenly serrate margins. The ground coloration is white to off-white or cream. The middorsal stripe continues onto the head anterior of the eyes, and the lateral stripes often proceed through and forward of the eye forming a small dark line or patch between the eye and naris (Holycross and Mitchell 2020). Ground coloration continues onto the venter, which is mottled on ventral scale rows and scutes with small and irregular blotches

that approximate the color of the dorsal stripes. The cloacal scute is undivided and strongly mottled with dark pigment (Holycross and Mitchell 2020).

AIDS TO IDENTIFICATION: This heavy-bodied snake is distinct from other snakes in Arizona, except the closely related *L. roseofusca.* In Arizona, the well-defined dark brown to nearly black stripes readily distinguish *L. trivirgata* from *L. roseofusca.* Additionally, the species appear to be allopatric in Arizona, with *L. trivirgata* occurring south of the Gila River, whereas (with the exception of populations in the Gila and Tinajas Altas mountains), *L. roseofusca* is found north of the Gila River (Holycross and Mitchell 2020).

ILLUSTRATIONS:
Color photo (Holycross and Mitchell 2020; pages 87,88, 91)

TOTAL RANGE: Occurs in most of Baja California, and from the vicinity of Guaymas north through western Sonora into central-southern Arizona (Klauber 1933, Zweifel and Norris 1955, Yingling 1982, Wood et al. 2008, Grismer 2002).

RANGE WITHIN ARIZONA: Vouchered from sites in the Aqua Dulce, Ajo, Bates, Crater, Growler, Little Ajo, North Maricopa, Puerto Blanco, Sand Tank, Sierra Pinta, and West Silver Bell Mountains in Maricopa, Pima, and Yuma counties (Wirt 1991, Brennan and Feldner 2001, Herritt 2017, Lynum and Pike 2013). Believed likely to occur in Batamote, Pozo Redondo, Sauceda, and South Maricopa mountains and potentially the Castle, Mesquite, Sheridan, and Vekol mountains as well (Holycross and Mitchell 2020).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Primarily a nocturnal, non-venomous rock dweller that spends most of its time deep in rock crevices or underground. Docile and unhurried snake, making it a favorite in the pet industry (Wright 1921, Holycross and Mitchell 2020). Most often encountered during the mating season in early spring. Most are found after dark, though surface activity in in morning or late afternoon is not uncommon in early spring. These snakes are infrequently encountered during the dry period of early summer, with surface activity and movements increasing during the summer rainy season. They remain active as late as September (Holycross and Mitchell 2020). Very few of these snakes have been found on the surface in the winter months (Merker and Merker 1995, Parizek et al. 1996).

Radio-telemetry study of five Three-lined Boas in Organ Pipe Cactus National Monument indicates individual home ranges of 1-2 ha. (similar to those of *L. roseofusca*) and infrequent movement patterns and strong site fidelity (Parizek et al. 1996). The boas in this study frequently used rodent burrows or rock crevices/cavities adjacent to signs of rodent activity (Parizek et al. 1996).

Observations of predation upon this species have not been published. Under sustained harassment, boas will occassionaly void the cloaca or form a ball with the head hidden in its coils (Grinnell and Grinnell 1907, Wright and Wright 1957).

REPRODUCTION: Viviparous Snake. Little is known of reproduction by this species in the wild. A breeding season of March-May has been reported, with young being born August-October (Grismer 2002). Litter sizes of two to eight have been recorded, but it is unknown if this is based upon field or captive observations (Grismer 2002).

Courtship consists of males moving spurs rapidly, stroking the posterior portion of the female. In response, the female may lift her tail, allowing intromission. Copulation likely lasts approximately half an hour (Kurfess 1967, Merker and Merker 1995).

FOOD HABITS: In the wild, Three-lined Boas appear to feed primarily on rodents, especially nestlings. *L. trivirgata* is likely capable of simultaneously constricting multiple prey (Parizek et al. 1996). These snakes appear to search widely for their prey but may sometimes employ ambush-hunting strategies (Rodriguez-Robels et al. 1999). Observations of these boas in desert trees and bushes suggest they may perhaps feed upon birds or bird eggs (Parizek et al. 1996).

HABITAT: This species is found in some of Arizona's most xeric mountain ranges. Abundances appear to be highest on the slopes of boulder and rock-strewn hills and mountains in Arizona Upland Desertscrub, especially in and adjacent to xeroriparian habitats bordering washes. In winter, relatively steep (20-40°) south-facing rocky slopes are selected for. In spring the snakes move downslope, and in summer and fall they occupy wash margins, adjacent lower slopes, and upper bajadas (Parizek et al. 1996). Radio-tagged boas in Arizona used a variety of shelters but were most often located in burrows of heteromyid rodents, burrows under rocks, in rock crevices, or in rock cavities (Parizek et al. 1996). A few Three-lined Boas have been found in desert washes and among creosote flats miles from rocky habitats (Lowe 1964).

ELEVATION: From sea level to about 5,000 feet (1,525 meters). Based on records in the Heritage Data Management System (AGFD unpublished data accessed 2003), elevation ranges from 700 – 5,640 ft (213-1719 m).

PLANT COMMUNITY: Arizona Upland Sonoran Desertscrub.

POPULATION TRENDS: Unknown

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: SC (USDI, FWS 1996)
[C2 - Full Species USDI, FWS 1994]

STATE STATUS: 2 (AZGFD, AWCS 2022)

OTHER STATUS:
[1B (AGFD SWAP 2012)]
Not Bureau of Land Management Sensitive – full sp. (USDI, BLM AZ 2010)
[Bureau of Land Management Sensitive under full species (USDI, BLM AZ 2000, 2005, 2008)]

MANAGEMENT FACTORS: Road mortality and collecting by hobbyists may reduce or threaten viability of populations which are small, isolated, and readily accessible (Rosen and Lowe 1994, Parizek 1996). Fortunately, much of this species habitat is in remote terrain that is difficult to access, and the secretive nature of the species allows some protection from collection as well (Holycross and Mitchell 2020).

PROTECTIVE MEASURES TAKEN: No commercial collecting is allowed.

SUGGESTED PROJECTS: Distribution, habitat, population and life history studies.

LAND MANAGEMENT/OWNERSHIP: BLM –Lower Sonoran, Yuma Field Offices; DOD – Barry M. Goldwater Air Force Range; NPS – Organ Pipe Cactus National Monument; FWS – Cabeza Prieta National Wildlife Refuge; Private.

SOURCES OF FURTHER INFORMATION

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ADDITIONAL INFORMATION:

Etymology: *Lichanura* refers to the stubby tail (*lichanos*, forefinger; *oura,* tail). *Trivirgata* references the pattern (*tri,* three; *virgata*, striped).

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