Observations on a Population of Mexican Lance-headed Rattlesnakes (Crotalus polystictus) from an Agricultural Area in the Mexican State of México

ROBERT W. BRYSON, JR.*
Department of Biology, Sul Ross State University
Alpine, Texas 79832, USA
e-mail: rob_bryson2002@yahoo.com

GYNKGO ULISES DE LA ROSA-LOZANO
and
DAVID LAZCANO
Laboratorio de Herpetología, Universidad Autónoma de Nuevo León
Apartado Postal - 513, San Nicolás de los Garza
Nuevo León, C.P. 600450, México

*Present address: Department of Herpetology, San Antonio Zoo
3903 North St. Mary’s Street, San Antonio, Texas 78212, USA

The Mexican lance-headed rattlesnake (Crotalus polystictus) is distributed across the Mexican Plateau and has been documented from the states of Veracruz, Puebla, México, Distrito Federal, Michoacán, Querétaro, Guanajuato, Jalisco, and Zacatecas (Campbell and Lamar 1989). Few data exist on the natural history of this species. Armstrong and Murphy (1979) provided habitat descriptions, behavioral observations, and morphometric data on several gravid females and their offspring. Other records of reproduction in C. polystictus were reported in Klauber (1972) and Hubbard (1980). Klauber (1972) stated that one specimen of C. polystictus contained mammary hair, and in another a small passerine bird and a small mammal. Specimens have been found in mesquite-grassland (Duellman 1965), plains-grassland, on plateaus in breaks of pine-oak forest (Armstrong and Murphy 1979), and in pine-oak forests (Campbell and Lamar 1989). McCranie and Wilson (2001) reported finding a female and six young near a stream in a cornfield in Aguascalientes. The historical range of C. polystictus may be declining because of the conversion of this species’ native habitat to farmland and habitat destruction (Armstrong and Murphy 1979; Greene and Campbell 1992). The draining of Lago de Chapala also might have caused a decline in the number of C. polystictus (Duellman 1961). Greene and Campbell (1992) listed this species as “vulnerable to extinction” because of habitat conversion and its restricted distribution.

The region of central México situated on the Mexican Plateau west of the Sierra Ajasco between Toluca and Atlacomulco is characterized by vast monocultures of corn fields. In mid-August 2001 we spent four days in the environs several kilometers north of Ixtlahuacán, México. This area lies at an average elevation of 2500 m and is relatively flat. Approximately 25 individuals of C. polystictus were observed. Most were found along a small stretch of earthen canal (ca. 50 m long) bordering a dirt road between two fallow corn fields. The canal averaged 1.5 m deep and 2 m wide, and was covered by thick vegetation. There was no running water in the bottom of the canal, though standing pools of water up to ca. 30 cm deep in places were present. Rodent burrows were found on the steep canal sides. Several other specimens of C. polystictus (including a female with neonates) were found ca. 1 km from the canal on top of a grassy earthen berm next to a cornfield.

All specimens were observed from 1115 h to 1815 h CST. On 10 August 2001 we were in the field from 9000 h until 1500 h. After 10 August all our search times were limited to the late afternoon and early evening (1500–1900 h). Cooler temperatures (< 15°C), cloudiness, and rain in the early evening limited C. polystictus activities. An adult male was found active at 1815 h before it started raining, and nocturnal activity, such as that found by Armstrong and Murphy (1979), is probable when environmental conditions are favorable. Specimens were located in a coiled position basking in direct sun in the morning and early afternoon. Often these basking individuals were found coiled on top of bunchgrass (cactión). Most specimens observed in the late afternoon and early evening were found actively crawling or in a semi-coiled position out of the direct sunlight, when it was present. Upon collection, specimens were restrained in clear plastic tubes for ease of handling and to verify sex and reproductive condition.

Adult C. polystictus were alert and difficult to approach. Specimens observed from a distance often laid motionless before being approached to within a few meters, at which time they would rapidly retreat into burrows. Several specimens that were first observed perched on cactión retreated into the water of the canal and could be heard or were seen swimming away. Klauber (1972) reported that Paul D. R. Ruthling found C. polystictus in the tules of Lake Chapala that sought refuge in the water. These behaviors contrast with those found in C. polystictus by Armstrong and Murphy (1979), who found these rattlesnakes to “generally not retreat when approached” during the summer.

Reproduction and mating behaviors in C. polystictus were observed. A female was found basking with six neonates on top of her at 1115 h on 10 August 2001. The air temperature was 17.4°C. Upon discovery the neonates and female took refuge under a nearby concrete fence post. Though no length measurements were taken, the female weighed 122 g and the combined weight of the neonates was 52 g. The neonates shed a few days later. At 1232 h later that day an adult female (167 g) was found with four neonates coiled next to her, one of which was shedding, on the steep side of the earthen canal in thick vegetation in partial shade. However, gentle palpation of the female revealed she was gravid. She gave birth to two live and two stillborn neonates and four infertile ova on 21 August 2001. No data were recorded on the litter.

Reproductive associations were observed in C. polystictus on several occasions. On 10 August 2001 at 1245 h an adult male (306 g) was found stretched out on top of an adult female (108 g) on the side of the earthen canal underneath a small bush. The male was collected but the female escaped into a rodent burrow. She was observed again at 1406 h below the rodent burrow coiled on top of another adult male. She was collected but the male escaped into the burrow. This female had shed after the first observation of her prior to being collected. The fresh shed skin was found near the entrance to the burrow and a small piece was stuck to her. The second male (identified by his unique dark coloration and large size) remained outside the entrance to the rodent burrow and was observed here for several days. On 14 August 2001 at 1750 h this male was found outside the entrance to the burrow alongside another adult male. The shedding of the female and release of pheromones may have stimulated the male courtship behavior, as dis-
cussed in Schuett (1992) and Aldridge and Duvall (2002).

This population of *C. polystictus* lies within an artificial, highly-modified habitat. Such an area may provide an increase in prey availability because of high rodent densities typically associated with agricultural areas. Several of the scats from wild collected individuals examined in the lab contained rodent hair (species not identified). Specimens were most commonly encountered near heavily vegetated earthen canals and berms. The monoculture created by hectares of uninterrupted cornfields contain unsuitable habitat, and thus concentrate populations of *C. polystictus* along breaks in their periphery. The use of agricultural chemicals and pesticides and conversion of earthen canals to concrete canals may negatively affect this population. Searches near concrete canals failed to produce any specimens of *C. polystictus*, presumably because of their lack of rodent burrows and vegetated sides. Although this population of *C. polystictus* appears to be healthy, it should be considered fragile because of its location in an area subject to further modification for agriculture.

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LITERATURE CITED


