REPRODUCTION IN THE MEXICAN LIZARD, *Sceloporus torquatus* *

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ABSTRACT

Collection of specimens and behaivoral observation of mexican lizard *Sceloporus torquatus* were made at Cerro Calacoaya, Bellavista, Mexico State, Mexico, in mid-November 1992 and late April 1993. It was determine the reproductive pattern. The snout-vent lenght [SVL], body mass and conditions of gonads were measured. Some females undoubtely mature in their first reproductive season at an age of 6 to 7 months. Culminating reproductive cycle of mexican lizard *Sceloporus torquatus* occur in a period of some weeks, between late April and first days of May.

Key words: Mexican lizard, *Scelopórus torquatus*, herpetology, reptilians.

RESUMEN

El estudio se llevó a cabo durante el mes de noviembre y finales de abril de 1992, en el Cerro Calacoaya de Bellavista, ubicado en el estado de México. Fueron colectados algunos especímenes de lagartija mexicana, *Sceloporus torquatus*, con objeto de determinar su patrón reproductivo. Se midió la masa corporal, abertura de hocico [SVL], así como la condición de sus gónadas. Se encontró que algunas hembras maduran en su primera estación reproductiva, entre los 6 y 7 meses. El ciclo

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culminante de reproducción de la lagartija *Sceloporus*, ocurre en un período de varias semanas, que se ubica entre el fin del mes de abril y principio de mayo.

Palabras clave: Lagartija mexicana, *Sceloporus torquatus*, herpetología, reptiles.

Relatively few studies exist on the ecology and natural history of *Sceloporus torquatus*. Hunsaker (1962)[1] examined behavioral isolating mechanisms, Staton and Conzelman (1975)[2] reported cannibalism, and Burquez *et al.* (1986)[3] provided information on the herbivorous diet. *Sceloporus torquatus* is known to be viviparous, but apart from taxonomic and distributional studies (*e.g.* Olson 1990)[4], we are unaware of other work.

To determine the pattern of reproduction and size of litters we collected small strategic samples in November and April since the reproductive cycle of several closely related species (*e.g. S. jarrovi* Goldberg 1971[5], Ballinger 1973[6], 1979[7]; *S. poinsetti*, Ballinger 1973; *op. cit.*, *S. mucronatus*, Mendez de la Cruz *et al.* 1988[8]) is well known to involve fall mating and spring parturition.

Collections of specimens and behavioral observation were made at Cerro Calacoaya, Bellavista, Mexico, Mexico in mid-November (13-17), 1992 and late April (16-25), 1993. Specimens were preserved and later examined for size (snout-vent length [SVL] and body mass) and conditions of gonads.

Figure N° 1 summarizes the reproductive condition in females. Four females (SVLs of 69-93) collected in November had developing ovarian follicles measuring 5.0 to 6.8 mm in diameter undergoing vitellogenesis. We observed courtship and two copulating

[1] Hunsaker, D., II. 1962. Ethological isolating mechanisms in the *Sceloporus torquatus* group of lizard. 16: 62-74.

[2] Staton, M. A., *and* J. Cozelmann. 1975. Cannibalism in *Sceloporus torquatus torquatus* Wiegmann (Reptilia : Sauria). 20: 147-148.

[3] Burquez, N., O. Flores-Villela, *and* A. Hernandez. 1986. Herbivory in a small iguanid lizard, *Sceloporus torquatus torquatus*. 20: 275-278.

[4] Olson, R. E. 1990. *Sceloporus torquatus*: its variation and zoogeography. 25: 117-127.

[5] Goldberg, S. R. 1971. Reproductive cycle of the ovoviviparous iguanid lizard *Sceloporus jarrovi* Cope. 27: 123-131.

[6] Ballinger, R. E. 1973. Comparative demography of two viviparous lizards (*Sceloporus jarrovi* and *Sceloporus poinsetti*). 54: 269-283.

[7] Ballinger, R. E. 1979. Intraspecific variation in demography and life history of the lizard, *Sceloporus jarrovi*, along an altitudinal gradient. 60: 901-909.

[8] Mendez de la Cruz, F. R., L. J. Guillette, Jr., M. Villagran Santa Cruz, *and* G. Casas-Andreu. 1988. Reproductive and fat body cycles of the viviparous lizard, *Sceloporus mucronatus* (Sauria : Iguanidae). 22: 1-12.

pairs in November. At this time of the year males have enlarged testes and epididymes/vas deferens filled with mature sperm.

Females collected in April either had well developed embryos, were immature, or were post-reproductive (possessed large oviducts indicative of recent parturition). Neonates were observed to be common in May although no samples were collected.

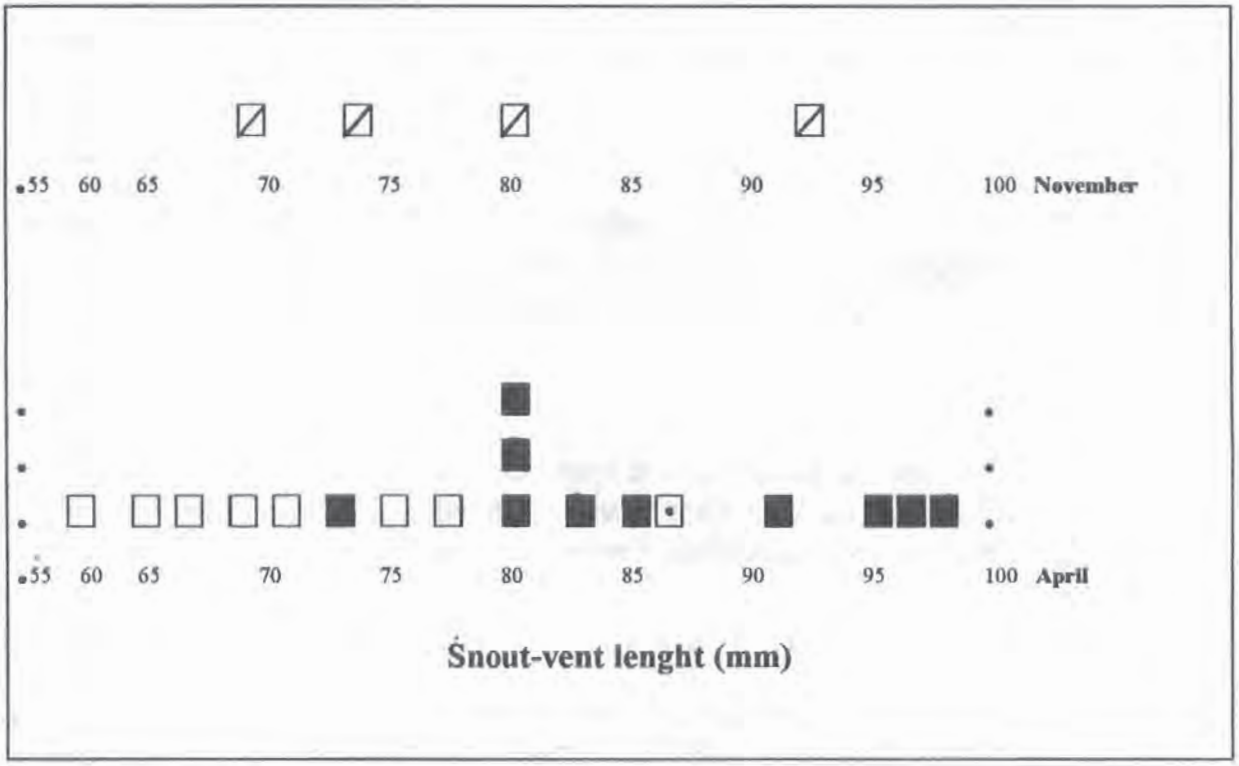
The period of reproductive activity is less synchronized than reported for *S. poinsetti* and *S. jarrovi* (Ballinger, *op. cit.*). One female collected on 24 April measured 86 mm SVL had prominent oviducts indicative of recent parturition.

Sizes of embryos in late April varied from 20-29 mm in ten females. Embryos measuring 27-29 mm had very small yolk masses (averaging 6 x 5 x 2 mm), fully developed scales and color patterns, and appeared ready for birth.

One female in April had embryos (20 mm SVL) in early stages of development without well formed scales, with enlarged eyes relative to the head, and large yolk masses (15 x 9 x 3 mm).

Two females in April had intermediately developed embryos (24 mm SVL) with some scale development, reduced eyes but no integumental color pattern, and intermediate yolk masses. Final development and parturition apparently occurs over an extended period of several weeks in late April and early May.

The variable date of parturition may result in variable ages at maturity. Although all females (4) collected in November were mature, including two that were likely less than a year old (SVLs = 69 and 72 mm) with small litters (5 and 4 vitellogenic follicles), seven (39%) females collected in April were immature.



Boxes represent single individuals. Open = immature; diagonal line = vitellogenic ovarian follicules; solid = embryos; dot = post reproductive.

Figure N° 1. Size and reproductive condition of females *Sceloporus torquatus.*

These immature females ranged from 58 mm SVL and 5.5 g to 77 mm SVL and 13.5 g. One 71 mm SVL (14.0 g) female in April had 3 embryos. The overlap in sizes of non-reproductive females (58-77 mm SVL) and reproductive females (69-97 mm SVL) suggests that reproductive maturity may occur in some yearling females (in their first reproductive season at an age of 6-7 months) but not in others. A similar occurrence of variation in maturity occurs in low altitude populations of *S. jarrovi* in Arizona (Ballinger 1979).

Litter sizes varied from 3-10 (mean = 6.43 $\pm$ 0.67 SE) and were significantly related to SVL ($r = 0.895$; $P < 0.01$; $y = -13.33 + 0.236x$; *vid., infra.*, Figure N° 2). Approximately one egg is added per 4.5 mm SVL. Females which we judged to be yearlings were either non-reproductive or had small litters (3, 4, or 5) whereas older females had larger litters (7-10 eggs or embryos).

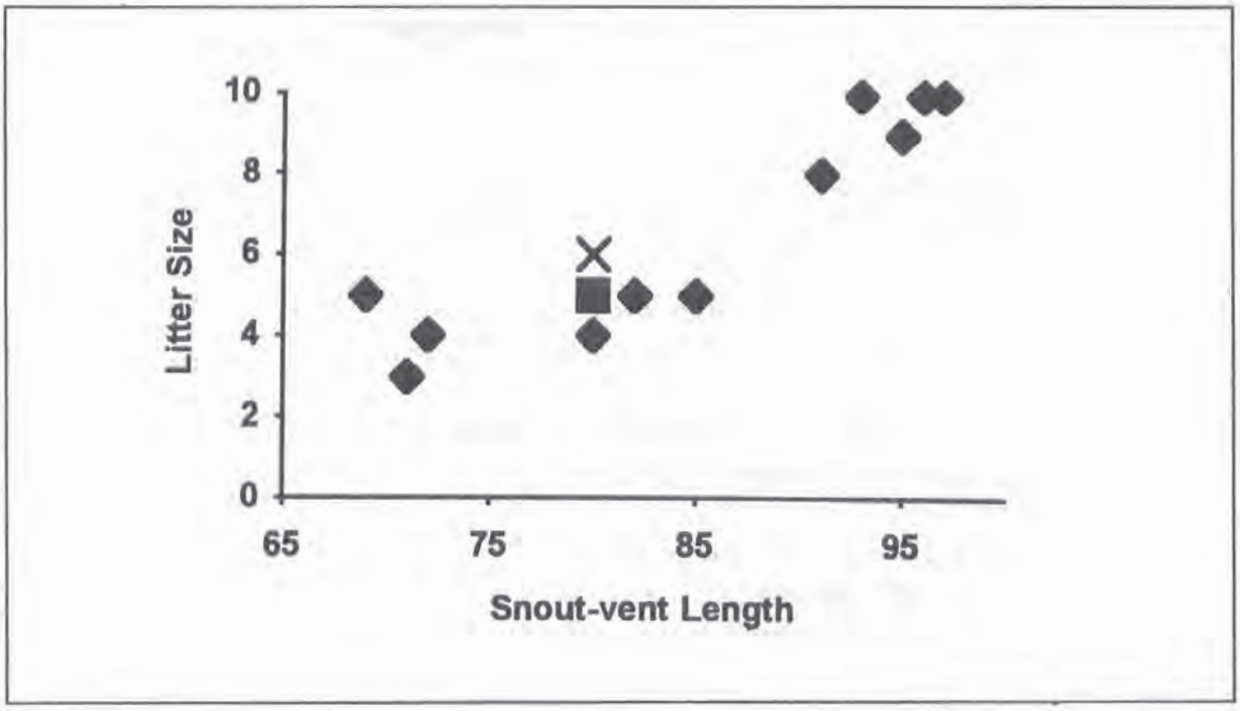


Figure N° 2. Relationship between litter size and snout-vent length in *Sceloporus torquatus*.

The reproductive pattern of *Sceloporus torquatus* is clearly similar to other species in the *torquatus* species group. Mating and vitellogenesis occurs in mid to late fall and parturition in mid to late spring. Some females undoubtedly mature in their first reproductive season at an age of 6-7 months whereas others apparently do not, but verification by mark-recapture studies is needed.

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