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Nota Científica

RECORDS OF *SPERMOPHILUS MEXICANUS* (RODENTIA SCIURIDAE) IN THE BOLSÓN DE MAPIMÍ (DURANGO, MEXICO) AND COMPARISON WITH TEXAN AND COAHUILAN FORMS OF THE *PARVIDENS* SUBSPECIES

Resumen: La ausencia de la ardilla terrestre mexicana *Spermophilus mexicanus* en el norte y centro del desierto Chihuahuense había sido atribuida a barreras fisiográficas. Aquí destacamos la presencia de esta especie en la Reserva de la Biosfera Mapimí, localizada en la parte central del desierto Chihuahuense. Estos registros extienden su distribución aproximadamente 250 km hacia el oeste y son los primeros para el estado de Durango. Los presentes registros constituyen los especímenes más pequeños conocidos de la especie.

Spermophilus mexicanus parvidens was first described at the beginning of the 20th century based on specimens trapped in 1894 at Fort Clark, Texas (Mearns 1907. *Bull. Smithsonian Institution U.S. Natural Museums* 56: 1-530). Since then, this subspecies has been found at other Texas (Bailey 1971. *Mammals of the Southwestern United States*; Edwards 1946. *J. Mammalogy* 27: 105-121; Hall 1981. *The mammals of North America*) and New Mexico localities (Young & Jones 1982. *Mammal. Sp.* 164: 1-4); and in several Mexican states: Tamaulipas (Hall 1981. *Op. cit.*), Coahuila (Baccus 1978. *Southwest. Nat.* 23: 706-708; Baker 1956. *Univ. Kansas Publ. Mus. Nat. History* 9: 125-335), Nuevo León (Ramírez-Pulido *et al.* 1983. *Lista y bibliografía reciente de los mamíferos de México*) and Zacatecas (Baker *et al.* 1980. *Southwest. Nat.* 25: 568-569). This distribution, with *S. m. parvidens* being absent in the northern an central part of the Chihuahuan Desert (Anderson 1972. *Bull. American Mus. Nat. Hist.* 148: 149-190; Baker & Greer 1962. *Publ. Mus. Michigan State Univ., Biol. Ser.*, 2: 29-154) had been explained as a result of physiographic barriers: to the north the Rio Grande filter-barrier, to the east the Sierra del Carmen-Sierra Madre Oriental filter-barrier, and to the south the Southern Coahuila-Río Nazas filter-barrier (Baker 1956. *Op cit.*; Schmidly 1974. In *Transactions Symposium on the Biological resources of the Chihuahuan Desert Region. United States and Mexico:* 163-192). Nevertheless several *S. m. parvidens* were observed since 1977 in the Mapimi Biosphere Reserve, located in the central part of the Chihuahuan Desert (26°30' to 26°52' N, 103°32' to 103°58' W) by V. Serrano, but thought to be *S. spilosoma pallescens* (UAM5544 deposited in the Universidad Autónoma Metropolitana at Mexico City) and one photograph published (Grenot 1983, *Desierto Chihuahuense. Fauna del Bolsón de Mapimí. Ecología y conservación de los vertebrados*). In the Mapimí reserve, *S. mexicanus parvidens* coexists with *S. spilosoma pallescens* which is relatively more abundant (Aragón & Baudoin 1989. *Acta Zool. Mex.* 36: 1-25; Aragón *et al.* 1993. In *Avances en el Estudio de los Mamíferos de México*. Publicaciones Especiales, Vol. 1: 274-287; Baudoin & Aragón 1991. In: *Le Rongeur et L'Espace:* 75-83). Here we provide external and skull measurements of adult specimens from Durango and compare them with those obtained by other authors in Coahuila and Texas.

Squirrels were caught with oat flakes-baited Sherman traps and prepared as museum specimens (skull and/or hide). Standard-body and skull measurements were obtained with calipers to the nearest mm (body measurements) or tenth of mm (ear length and skull measurements). Differences in length measurements and mass

between localities and sexes were investigated by Mann-Whitney tests and student-t tests respectively. For these analysis only reproductive individuals were used. Some specimens (three males, UAM5544, IBUNAM26643, VSF4778; and six females, IBUNAM26637-42) were deposited in the mammal collections of the Instituto de Biología, Universidad Nacional Autónoma de México (IBUNAM) and of the Universidad Autónoma Metropolitana-Iztapalapa (UAM).

Table 1 presents the average body measurements and mass of *S. m. parvidens* from Texas (Mearns 1907. *Op cit*.), Coahuila (Baker 1956. *Op cit*.) and from Durango (this study). Total length of Mexican ground squirrels from Mapimí (sexes lumped) is significantly different from total length of the squirrels described by Mearns in 1907 (Mann-Whitney U=5.11, p=0.001). The same is true for tail length (U=13, p=0.009) and length of the hind-foot (U=0, p=0.001). In general, external measurements of those animal collected in Mapimí are smaller than those of *S. m. parvidens* from Texas and Coahuila. This fact is also reflected in a lower body mass than that reported by Edwards (1946. *J. Mammalogy* 27:105-121) and Baker (1956. *Univ. Kansas Publ. Mus. Nat. History* 9:125-335). Color patterns correspond largely to that typical of the subspecies (Young & Jones 1982. *Mammal. Sp.* 164:1-4) although the nine rows of whitish spots are not always neatly aligned. We compared ranges of skull measurements of Mexican ground squirrels from Mapimí and Coahuila, the nearest locality for which such measurements are reported (Table 2). All Mapimí males have smaller average values than Coahuila males and except for least interorbital breadth, it exists no overlap in the measurement ranges for the skull characters. Mapimí females have smaller average value in six of the eight characters considered (those correlated with skull elongation), however ranges slightly overlap in all traits but the length of nasals.

Table 1

Comparison of external measurements and mass of three populations of *Spermophilus mexicanus parvidens*. Mean, (range) and sample size.

Trait	Sex	Durango, Mexico (this study)		Texas, USA (Mearns 1907)		Coahuila, Mexico (Baker 1956)	
Total length (mm)	%	249.0 (243-255)	3	308.0 (300-325)	5	301 (286-312)	4
	&	245.5 (216-273)	6	280.6 (258-303)	5	283 (276-286)	4
Tail length (mm)	%	92.0 (80-100)	3	118.2 (95-130)	5	119 (106-127)	4
	&	102.2 (80-116)	6	113.2 (105-124)	5	116 (115-120)	4
Hind-foot length	%	34.0 (33-35)	3	41.3 (39-44)	5	40 (38-42)	4
(mm)	&	32.3 (31-34)	6	38.8 (36-42)	5	39 (37-40)	4
Mass (g)	%	142.2 (100-200)	24	-		186 (145-210)	3
	&	118.8 (90-152)	23	-		130 (126-135)	2

The closest reports of *S. m. parvidens* to our study site are on four individuals collected in western Coahuila by Marsh in 1938-1939 (Baccus 1978. *Southwest. Nat*. 23: 706-708), and on one individual collected in the northern part of Zacatecas (Baker *et al*. 1980. *Southwest. Nat.* 25: 568-569). These two localities are about 250 km NE and SE respectively of the Mapimí Desert laboratory in Durango. Assessing whether the Mapimí population is a new subspecies awaits genetic data and a larger sample of measured specimens from populations of the three neighbor states, Coahuila, Zacatecas and Durango. Body and skull sizes of *S. m. parvidens* in Mapimí are similar to those of *S. spilosoma pallescens*, the other co-occuring ground squirrel. The latter is classified as a high-

adapted desert species on a physiological basis (Hudson & Deavers 1973. *Comparative Bioch. Physiol.* 45: 69-100). At present, squirrels from Mapimí are the smallest *S. mexicanus* ever described. Although dimorphism could not be investigated in detail here because of small sample sizes, a comparison of weights between males and females (Table 1) indicates that males are significantly heavier than females ($t=2.69$, $d.f.=45$, $p<0.005$) as Baker (1956. *Op. cit.*) and Mearns (1907. *Op. cit.*) emphasized for *S. mexicanus parvidens* populations of Coahuila and Texas respectively.

Table 2

Comparison of cranial measurements of *Spermophilus mexicanus parvidens* from Mexico. Means and (ranges) in mm; n = sample size.

Trait	Sex	Present study (Durango) n = 16 (4 %%, 12 &&)		Baker (1956; Coahuila) n= 8 (4 %%, 4 &&)	
Greatest length of skull	%	41.1	(39.9-42.3)[a]	43	(42.5-43.5)
	&	40	(37.7-42.0)[b]	42	(41.1-42.8)
Palatilar length	%	18.4	(17.6-18.9)	20.2	(20.1-20.3)
	&	18	(16.0-19.9)	19.9	(19.7-20.1)
Zygomatic breadth	%	22.8	(22.2-23.7)	25.4	(24.5-26.1)
	&	22.8	(20.5-25.6)	23.9	(23.7-24.4)
Cranial breadth	%	17.6	(17.4-18.2)	18.9	(18.6-19.3)
	&	17.6	(16.8-18.4)	17.9	(17.8-18.1)
Least interorbital breadth	%	9.4	(8.8-10.0)	9.6	(9.2-10.1)
	&	9	(8.2-10.8)	8.8	(8.3-9.0)
Postorbital constriction	%	12.9	(12.5-13.0)	13.5	(13.1-13.9)
	&	12.7	(11.4-13.3)	12.6	(12.0-13.3)
Length of nasals	%	13.2	(12.5-14.2)	14.8	(14.4-15.2)
	&	12.8	(12.2-13.8)	14.5	(14.1-14.9)
Length of maxillary toothrow	%	7.6	(7.3-8.0)	8.5	(8.3-8.6)
	&	7.7	(7.3-8.0)	8.1	(7.9-8.3)

[a] n = 2; [b] n = 6

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