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Scorpions are a food item of American black bears in Sonora, Mexico

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American black bears (Ursus americanus) are omnivores (Maehr and Brady 1984, Leopold 1985, Hellgren 1993, Stubblefield 1993, Beecham and Rohlman 1994, Doan-Crider 1995, SEMARNAP 1999), and the diets of individuals vary depending on the geographic location and habitat type where they are found (Beecham and Rohlman 1994, Lariviere 2001). Black bears in forested montane "islands" surrounded by desert landscapes exhibit feeding habits (Sierra Corona et al. 2005, Rodriguez Martinez et al. 2008) different from black bears at northern latitudes (Maehr and Brady 1984, Hellgren 1993, Stubblefield 1993). We report, for the first time, evidence that scorpions are part of the diet of black bears in Sonora, Mexico.

A total of 180 bear scats were collected from the "El Pinito" Ranch, located in the Sierra de San Luis, Sonora, Mexico (northwestern corner: 31.20°N, 109.94°W; southeastern corner: 31.12°N, 108.82°W) (Fig. 1), during April–November 2002. Through separation and analysis, remains of scorpions were found in 7 scats. These remains allowed us to identify the consumed species as Diplocentrus peloncillensis Francke. The fragments are stored as vouchers in the Zoological Collection of the Facultad de Ciencias Naturales, Universidad Autónoma de Querétaro, Querétaro, México.

The scats that contained the remains of D. peloncillensis were collected at 7 different localities during 5 different months and in 2 different forest habitats. The specimens were almost equally distributed between the wet and dry seasons (Fig. 1). Four of the scats were found within the same general area in open low forests but during 3 different months. The other 3 scats were found in pine-oak or open forests more than 2 km from other collections (Fig. 1). It is possible that all scats were from the same individual or family group. However, at least 16 individuals were estimated to be present within the ranch (Sierra Corona et al. 2005), and because black bears have overlapping foraging ranges (LeCount 1982, Lariviere et al. 1994), the temporal and spatial separation of scats suggests that feeding on scorpions may have been a behavior of several individuals.

The presence of D. peloncillensis in bear scats from Sonora also represents a new country record for this species. Although the collection method is unusual, the presence of D. peloncillensis in Sonora, Mexico, is not particularly surprising given that the species is

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reported from the neighboring states of New Mexico and Arizona in the United States. Other species of Diplocentrus are reported only from the United States but also probably exist in adjacent Mexican states (Francke 1975).

The consumption of *D. peloncillensis* apparently does not constitute a large proportion of the diet in this black bear population (3.8% frequency of occurrence in scats). *Diplocentrus peloncillensis* is known to have fossorial habits, living in deep burrows and ambushing prey at the entrance (Francke 1975). It is also known that the poison of *D. peloncillensis* is not lethal to vertebrates, and this may explain why bears are not averse to feeding on this species. Bears may feed on scorpions when individuals are encountered on the surface, and the frequency of encounters may be correlated with the sexual cycles of the scorpions. Males of *D. peloncillensis* seek females during the warm months and after rains (Oscar F. Francke personal communication), at which time they travel on the soil surface (Ponce-Saaveda 2003), leaving them more exposed to predation. It is unknown whether bears eat scorpions only as the result of chance encounters when *D. peloncillensis* individuals are active aboveground or whether there is an actual functional response under certain conditions in which bears initiate active, directed searches for the species. More studies are necessary to determine the importance of scorpions in the diet of black bears and what factors lead to their consumption.

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