

Extension of the distribution of *Pantherophis emoryi* (Baird & Girard, 1853) (Squamata: Colubridae) in Mexico

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Localities- Mexico, Veracruz, Municipality of Paso de Ovejas, in the locality of Paso Limón (19.240858°N; 96.509931°W; WGS 84; 195 m a.s.l.; Fig. 1). On 20 May 2018, around 0745 h AMH found a dead adult individual, which presented reddish-brown back of

body pattern with dark brown spots, light and dark arrow-shaped markings (V) on top of head; 44 blotches on the body and 18 on the tail; 8/8 supralabial. The individual was run over in the vicinity of a pig farm. We deposited a photographic voucher for the



Figure 1. An adult specimen of *Pantherophis emoryi* (LACM PC 2763-2764) from the municipality of Paso de Ovejas, Veracruz, Mexico.

specimen in the digital collection of the Natural History Museum of Los Angeles County (LACM PC 2763-2764).

Mexico, Veracruz, Municipality of Paso del Macho, in the locality of Paso Espuela (18.919942°N; 96.542096°W; WGS 84; 230 m a.s.l.; Fig. 2). On 8

July 2020, around 1440 h, VVC, EOB, RPH and JLCJ found a subadult male individual. It had a snout vent length of 721 mm and total length of 830 mm. Back of body pattern light brown with dark brown spots, light and dark arrow-shaped markings (V) on top of head; 47 blotches on the body and 20 on



Figure 2. A subadult specimen of *Pantherophis emoryi* (LACM PC 2765-2766) from the municipality of Paso del Macho, Veracruz, Mexico.

the tail; 27 rows on mid-body; 8/8 supralabial and 11/11 infralabial; 221 ventrals and 69 subcaudals. The individual was found dead on a path, the vegetation corresponds to grassland. We deposited a photographic voucher for the specimen in the digital collection of the Natural History Museum of Los Angeles County (LACM PC 2765-2766).

Comments- Great Plains Rat Snake, *Pantherophis emoryi* (Baird & Girard, 1853) (Squamata: Colubridae), it's a medium-size snake (total length=1530 mm; Heimes, 2016). Its distribution is wide, ranging from southwestern Illinois, Missouri, southern South Dakota and southeastern Colorado in the

United States, to the south in Mexico in the states of Aguascalientes, Chihuahua, Coahuila, Durango, Hidalgo, Nuevo León, Querétaro, San Luis Potosí, Tamaulipas and Veracruz (Heimes, 2016; Uetz *et al.*, 2021) Recently, Quintero-Díaz *et al.* (2016), provide the first record of *P. emoryi* in the state of Aguascalientes and a list of localities and museum specimens. It inhabits a great variety of environments, in arid and tropical regions; its occurrence seems to be limited to the proximity of permanent bodies of water (Ramírez-Bautista *et al.*, 2014).

The records presented here are the result of opportunistic encounters. We determined the indi-

viduals considering the diagnostic characteristics of *P. emoryi* proposed by Ramírez-Bautista *et al.* (2014) and Heimes (2016). A medium sized snake with a dorsal pattern of dark blotches; arrow-shaped light and dark markings on top of the head; There are 28–45 blotches on the body and 11–23 on the tail; 8–9 (rarely 6 or 7) supralabials, 10–13 (rarely 14 or 15) infralabials, 1 loreal, 1 preocular, 2 postocular; midbody scale rows usually 27 but often 29; ventrals 201–236. Dorsal scales are smooth except for the middorsal rows which are very weakly keeled; the ventrals have distinct lateral keels. The determination was verified by Luis Canseco Márquez. In the center of Veracruz, the snakes *Pseudelaphe flavirufa* (Cope, 1867), and *Senticolis triaspis* (Cope, 1866) are distributed, species that have dorsal patterns similar to *P. emoryi*. Nevertheless, we can distinguish *P. emoryi* of *P. flavirufa* in that the former has a lower number of supralabials (6–9 vs 9–10), infralabials (10–13 vs 12–15) and ventrals (201–236 vs 242–269). Same, we can differentiate *P. emoryi* of juveniles of *S. triaspis* in which it presents a lower number of dorsal scales in rows at midbody (27–29 vs 31–39) and a lower number of dorsal blotches on the body and tail (39–68 vs 60–111). The inverted V-shaped spot on the head in *P. emoryi* is absent in *P. flavirufa* and in juveniles of *S. triaspis*.

In the state of Veracruz, *P. emoryi* only had been reported in the northern region (Heimes, 2016; Quintero-Díaz *et al.*, 2016; Uetz *et al.*, 2021): at 17 mi. south of Pánuco (Pérez-Higareda and Smith, 1991), El Higo (Colección Nacional de Anfibios y Reptiles; CNAR: 00929; Flores-Villela, 1998), and 29.3 mi. north of Temporal (Milwaukee Public Museum; MPM: 18387; Flores-Villela, 1998). Additionally, two specimens are deposited in the Florida Museum of Natural History (UF 49401, 49402), in locality San Luis Potosi border, 57 km west of Tampico (Flores-Villela, 1998), nevertheless, also these individuals have been mentioned in platform of VertNet (2021) incorrectly with the verbal description of the locality “Mexico 70, west of Tampico near San Luis Potosi state border”. Thus, our records significantly increase the distribution of *P. emoryi*, ~ 362 km to the south in the state of Veracruz and 282 km south of the closest known locality in Yahualica in state of Hidalgo (Fig. 3), particularity Paso Espuela, is the most equatorial in the distribution of the species. Additionally, we report the maximum number of blotches on the body in 47 vs 45 (Heimes, 2016).

Some regions of central Veracruz are

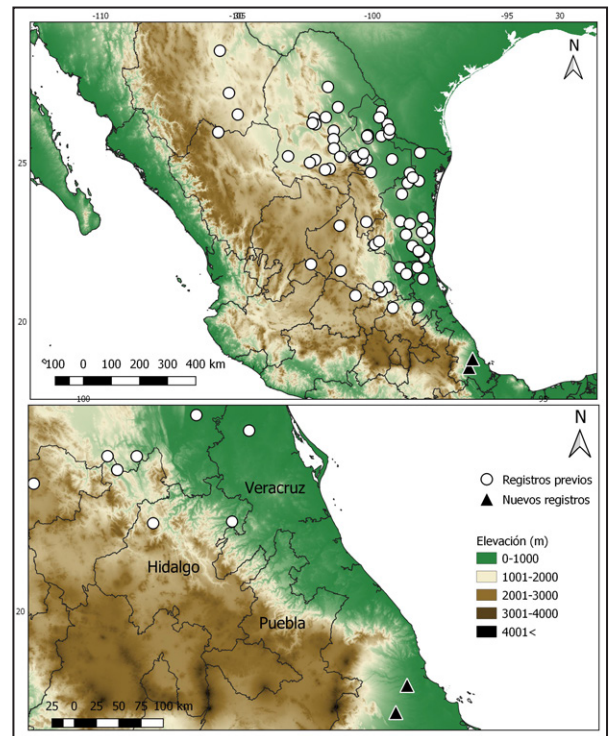


Figure 3. Distribution map of *Pantherophis emoryi* with collecting localities in México. The new localities in black triangle and previous localities in white circles, black lines represent state boundaries. The previous localities were taken of vouchers museum of Pérez-Higareda and Smith (1991), Flores-Villela (1998), Quintero-Díaz *et al.* (2016) and CONABIO (2021).

considered biologically important areas or “hot spots” (Ochoa-Ochoa and Flores-Villela, 2011). These sites have been of great interest to find new species of amphibians and reptiles like *Geophis lorancai* (Canseco-Márquez *et al.*, 2016), *Isthmura corrugata* (Sandoval-Comte *et al.*, 2017), and *Pseudoeurycea granitum* (García-Bañuelos *et al.*, 2020). In addition, in recent years, the report of herpetological novelties has increased (see Solano-Zavaleta *et al.*, 2017; Peralta-Hernández *et al.*, 2020; De La Torre-Loranca *et al.*, 2020; Pineda *et al.*, 2020), in most cases in mountainous areas at elevations above 900 m. Nevertheless, to the best of our knowledge, no work has been carried out on this group in the municipality of Paso de Ovejas and in the municipality of Paso del Macho is scarce and recent (Vásquez-Cruz *et al.*, 2021). We consider this as the main cause of the absence of previous records of *P. emoryi* in the center of Veracruz. Another probable cause is that in nearby regions to our localities *P. emoryi* has been confused with similar species such as *P. flavirufa* and with juveniles

of *S. triaspis*.

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