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RATTLESNAKES (GENUS *CROTALUS*) OF THE PEDRO ARMENDARIZ LAVA FIELD, NEW MEXICO.—Populations of melanistic rattlesnakes have previously been reported from three lava fields in the United States. Dark-pigmented speckled rattlesnakes (*Crotalus mitchelli*) have been reported from the Pisgah lava flow in southern California (Norris, 1967), and dark black-tailed rattlesnakes (*C. molossus*) have been collected on the Tularosa malpais (Lewis, 1949) and Afton lava flows (Prieto and Jacobson, 1968) of southern New Mexico. The purposes of this report are to present the first data on melanism for black-tailed rattlesnakes found on the Pedro Armendariz lava field of south-central New Mexico, to report the first known melanistic population of the western diamondback rattlesnake (*C. atrox*), and to comment on the food habits of *C. atrox* and on the body dimensions of *C. atrox* and *C. molossus*.

The Pedro Armendariz lava field, located in Socorro and Sierra Counties, New Mexico, is approximately 760,000 years old (Bachman and Mehnert, 1978). It is 15–20 km in diameter, and has one large crater near its center (elevation 1,566 m). The 3–5 m high edge of the black lava abruptly meets the light-colored sandy-soiled plains on all sides and the elevation gradually increases toward the crater in a series of low hills. The field is well vegetated with shrubs and grasses, and in many areas small lava pebbles form desert pavement between the plants.

From May 1980 to May 1982, 15 *C. atrox*, 6 prairie rattlesnakes (*C. viridis*) and 1 *C. molossus* were collected on the lava field. Specimens were fixed in 10% formalin and stored in 40% isopropyl alcohol. Coloration was noted in the field. Snout–vent length (SVL), tail length (TL) and number of scale rows at mid-body (SR) were determined from the preserved specimens deposited in the Eastern New Mexico University Natural History Museum in Portales.

The six *C. viridis* did not exhibit melanism when compared to specimens collected off the field. No melanistic populations of this species are known. In contrast, since dark-colored spec-

imens of *C. molossus* have been reported from two other lava flows in New Mexico (Lewis, 1949; Prieto and Jacobson, 1968), we expected similar coloration of specimens from the Pedro Armendariz lava field. When compared to specimens collected elsewhere in New Mexico, the only specimen as dark as ours was from the Tularosa malpais. Unfortunately, we did not have comparative material from the Afton lava flows. Thus, the three lava flows where *C. molossus* have been collected have dark individuals.

The Pedro Armendariz specimen of *C. molossus* was 84.6 cm SVL, TL 5 cm, SR 29. The specimen from the Tularosa malpais was 79.7 cm SVL, TL 5 cm, SR 27. Measurements of these two specimens are near the small end of the size range for the species (Klauber, 1956; Conant, 1975).

When compared to other specimens from central New Mexico, all of the *C. atrox* we collected exhibited melanism. This is the first melanistic population reported for the species. Measurements (cm) of the 15 specimens were: SVL—mean 72.4, range 30.3–94.9; TL—mean 5.9, range 4.3–8.4; SR—mean 24.3, range 21–25. Two gravid females were 75.4 SVL (3 May 1980) and 77.4 SVL (25 April 1981). These dimensions clearly indicate that the body sizes of our specimens are small compared to the range for *C. atrox* given by Klauber (1956) and Conant (1975).

Three of the four *C. atrox* with stomach contents had eaten birds. One contained a fully-feathered nestling or fledgling horned lark (*Eremophila alpestris*), another a post-fledgling black-throated sparrow (*Amphispiza bilineata*) and the third had four unidentified "sparrow-sized" bird feathers. The fourth contained body fragments of a collared lizard (*Crotaphytus collaris*). These foods have not previously been reported for New Mexico diamondbacks; however, Lewis (1950) reported a large whiptail lizard (*Cnemidophorus* sp.) in the stomach of a specimen collected east of the Organ Mountains in southern New Mexico.

Dark populations of *C. atrox* have not developed in either the 1,000 year old (Renault, 1970) Tularosa malpais or the 80,000–8,500,000 year old (Hawley, 1967; Hawley and Kottlowski, 1969; Hoffer, 1971) Afton lava flows (Lewis, 1951; Prieto and Jacobson, 1968), but those on the Pedro Armendariz lava field are very melanistic. Conversely, *C. molossus* are dark colored on all three of the flows—though not as dark as the *C. atrox* from the Pedro Armendariz lava field. Since the three flows provide a substrate that is quite dark in color, darker populations of *C. atrox* might be expected on all of them. Elder (1977) described the mosaic of soil and lava at the Afton flows, and we have observed a similar patchy substrate color pattern across the entire Pedro Armendariz field; however, this pattern is not present on the Tularosa malpais. A species that is not restricted to either rocky or sandy soils, such as *C. atrox*, might be at a selective disadvantage since a dark body would be quite conspicuous on the light-colored sandy-soils distributed throughout the flows and the surrounding desert. Although the substrate color on the Tularosa malpais is not characterized by patches of light and dark, the flow is very narrow; thus, it could permit as much movement from one colored background to another as either of the other flows. Then, why are the *C. atrox* dark colored on the Pedro Armendariz field and not the other lava outcrops? Perhaps this population is more isolated from nearby populations than those on the Tularosa malpais or the Afton lava flows, or perhaps they generally avoid light-colored substrates which would favor selection for melanism.

The body sizes of *C. atrox* on the Pedro Armendariz lava field and *C. molossus* on both the Tularosa malpais and the Pedro Armendariz fields are toward the small end of the size range for these species. Although these observations are based upon a small sample, they are quite consistent. Substrate coloration might best explain the selection for color, but why the small body size? Could prey size, predators or food availability affect body size? Analyses of the effects of substrate coloration, vegetative cover, age of the lava field, interspecific interrelationships, available food species, etc., are needed to more fully elucidate factors influencing color and size selection in lava-dwelling rattlesnakes.

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