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A POPULATION OF *PHRYNOSOMA DITMARSII* FROM SONORA, MEXICOCHARLES H. LOWE,¹ MICHAEL D. ROBINSON,¹ and VINCENT D. ROTH²

We have obtained recently a sample of 21 individuals of the long-sought horned lizard *Phrynosoma ditmarsii* Stejneger, from the Sierra Manzanal located south of Sierra Cananea, in Sonora, Mexico. The population is in evergreen woodland situated above and adjacent to the grassland habitat of *P. douglassii* on the llanos of northeastern Sonora.

The evergreen woodland in the Sierra Manzanal contains two oak-dominated communities occupied by *P. ditmarsii*, (1) oak woodland (with *Quercus emoryi* and *Q. oblongifolia*), and (2) oak-pine woodland (with *Q. emoryi*, *Q. toumeyi*, and *Pinus cembroides*), which is an ecotone to the more highly elevated Mexican pine-oak woodland of the Sierra Madrean system. Perennial grasses (including *Andropogon*, *Bouteloua*, *Eragrostis*, *Heteropogon*, *Muhlenbergia*), perennial and deciduous shrubs (including *Arctostaphylos*, *Garrya*, *Rhus*, *Dalea*, *Mimosa*), and dry-tropic succulents (including *Agave*, *Dasylium*, *Nolina*, *Opuntia*, *Yucca*) are important components of the evergreen woodland, or encinal, in the Sierra Manzanal.

Comparisons of our series with the holotype (USNM 36022) and paratype (USNM 36013) of *P. ditmarsii*, and with the third known specimen (AMNH 557) and Stejneger's original description (1906) of the species, clearly verify that the population represented by our sample is *P. ditmarsii* (Table 1, Fig. 1). Coloration is variable (shades of brown, gray, red, yellow, and ventral white), including the dorsal "reddish" in life reported by Stejneger (1906). However, we note discrepancy between our material and reports emphasizing "smoothness," and "hornlessness," and "bizarreness" for *P. ditmarsii* (e.g., Stejneger, 1906; Smith, 1946; Smith and Taylor, 1950). All of our individuals of this species (alive and as specimens) are definitely spinose, albeit sometimes with small spines (Fig. 1). The earlier preserved specimens deposited in the American and National museums (above) are now worn more or less smooth at some of the more prominent spine positions on the head and body.

Phrynosoma ditmarsii (from the Sierra Manzanal) is a heavy-jawed, very short-horned, prickly spinose, Sierra Madrean woodland horned lizard, that is closely related to *Phrynosoma douglassii*. While it is to us a more than usually interesting horned lizard, we would not describe it as a "bizarre" species.

We do not at this time restrict the type locality of *P. ditmarsii* to the Sierra Manzanal, for several reasons including pending results of our present investigation of this species in other areas of northern Sonora.

Phrynosoma ditmarsii has shorter spines, by and large, than does its close relative *P. douglassii*; on the other hand, we add that some of the head spines of *P. ditmarsii* are sharper (more pointed at tip). The ecological distributions of *Phrynosoma ditmarsii* and *P. douglassii* are closely adjacent. We have found them nearly sympatric, and expect them to be sympatric at several points in the woodland-grassland ecotone.

Phrynosoma ditmarsii has not been found since its original description by Stejneger (1906) based on the two specimens from Ditmars. An earlier unidentified specimen (AMNH 557) was collected in "northern Sonora" during the 1890-91 Lumholtz (1902) expedition. The recent history of search for *P. ditmarsii*, that centered in the region surrounding Sierra Cananea, Sonora, began in the 1950's. While camping and searching through Sonoran oak woodlands for *P. ditmarsii*, C. H. Lowe contacted mining engineer Mr. Arthur Ruff, living at Cananea, Sonora. The result was a large collection of 49 *P. douglassii* now at the University of Arizona, collected to within a dozen or so miles of the Sierra Manzanal, without collection of *P. ditmarsii*.

In 1968, M. D. Robinson began an analysis of the 1890-91 route of the Lumholtz expedition on which F. Robinette collected the first specimen of *P. ditmarsii*. This specimen was deposited at the American Museum of Natural History. The locality information for the AMNH specimen was provided through the courtesy of C. J. Cole and R. G. Zweifel. The Lumholtz analysis by Robinson pointed again to that Lumholtz trail area in Sonora south of Cochise County, Arizona, in the vicinity of Sierra Cananea, near where the party crossed into Sonora from Arizona on Rio San Pedro. In 1969, Robinson received a research grant from the Arizona-Sonora Desert Museum for field study of the *P. ditmarsii* problem on the Lumholtz trail in oak woodland and forest habitats in northern Sonora and Chihuahua. Robinson's retracing of the Lumholtz expedition further narrowed our search which proceeded with greater certainty in northeastern Sonora.

Analysis of the stomach contents of *Phrynosoma ditmarsii* by Roth (1971) again pointed the problem to the Cananea area. At Cananea and in the Sierra Manzanal, Roth was told by Mr. Hector Lopez, a

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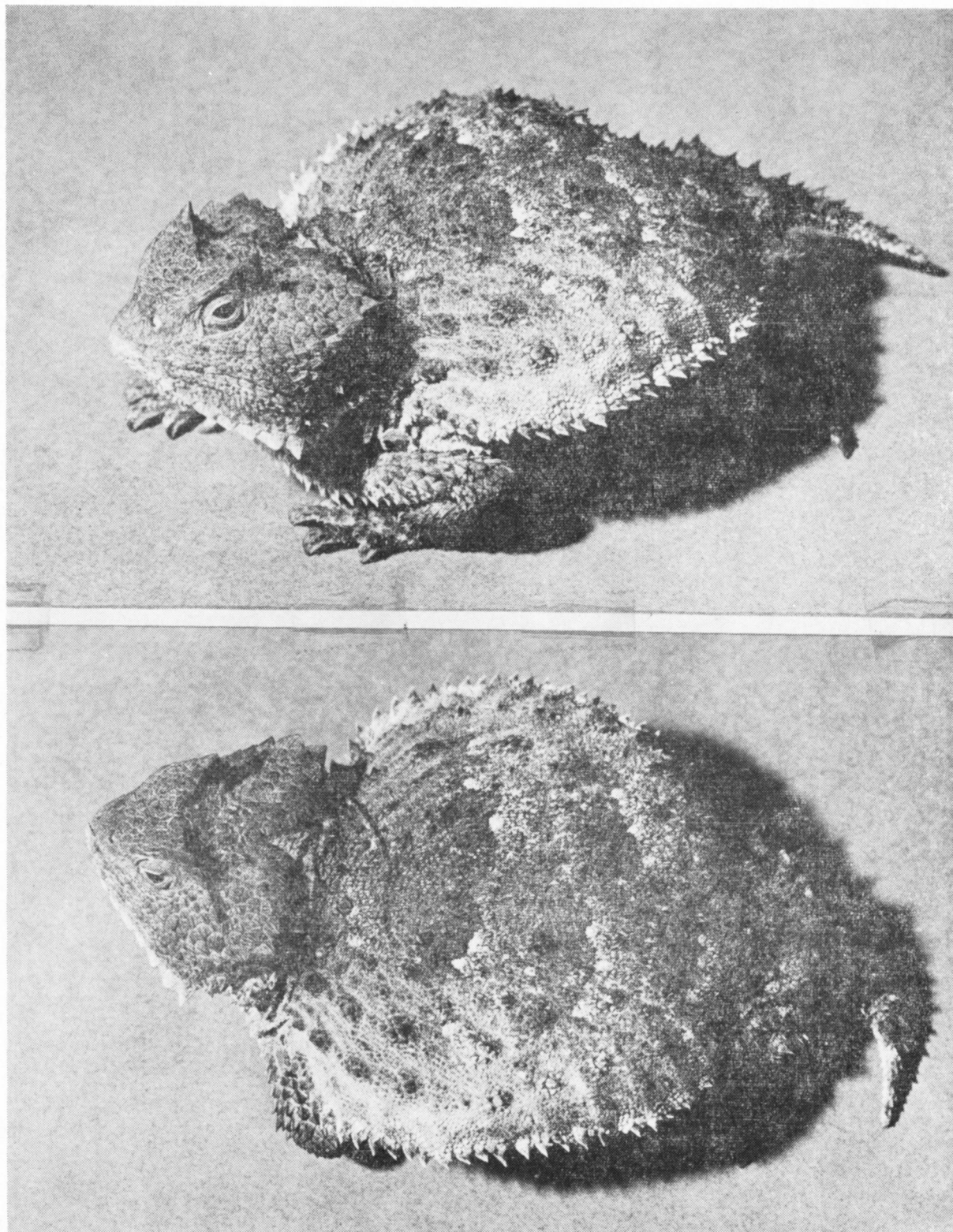


Figure 1.—*Phrynosoma ditmarsii* Stejneger, adult female, 82 mm snout to vent. Sierra Manzanal, Sonora, Mexico.

mining engineer, that he had seen a horned lizard that resembled the *Phrynosoma* Roth had described to him. Several days later, Mr. Paul Geiger brought an adult horned lizard collected by the field crew to Roth who accepted the specimen as a *Phrynosoma douglassi*. Later Lowe identified the specimen as *P. ditmarsii* and initiated the collection of additional material obtained on subsequent trips by the three of us into the Sierra Manzanal. With the aid of Mr. Geiger and his field crew, we made the collection of the 21 specimens reported here.

Dr. James A. Peters of the United States National Museum and Dr. Richard G. Zweifel of the Ameri-

can Museum of Natural History kindly made available to us the specimens of *Phrynosoma ditmarsii* under their care. We thank Mr. Paul Geiger and his associates in Cananea, Sonora, especially Señor Hector Lopez and family, Mr. Sam Sims, and Mr. Mac Forbes for the kind hospitality and assistance rendered us in the field during 1970, and we thank Mr. Arthur Ruff also of Cananea for a collection of horned lizards made there for us earlier. Our field work on *Phrynosoma ditmarsii* was graciously supported in part by the Roy Chapman Andrews Research Fund of the Arizona-Sonora Desert Museum, Tucson, Arizona, through its Director Mr. William H. Woodin.

Table 1. Comparison of a sample of *Phrynosoma ditmarsii* from the Sierra Manzanal, Sonora, with the holotype (USNM 36022) and with the earlier Lumholtz specimen (AMNH 557); all adults.

| Character | AMNH 557 ♀ | USNM 36022 ♂ | UAZ Sample ¹ |
|-------------------------------|-----------------|-----------------|-------------------------|
| Snout-vent length (mm) | 77 | 76 | 77 |
| Head length | 17 | 19 | 19 |
| Greatest head width | 27 | 28 | 27 |
| Depth of lower jaw | 6 | 6 | 6 |
| Ventral scales | keeled | keeled | keeled |
| Postorbital ridge | high | high | high |
| Occipital notch | deep and narrow | deep and narrow | deep and narrow |
| Occipital and temporal spines | greatly reduced | greatly reduced | greatly reduced |

¹Means for 3 males and 2 females (n=5).

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