NEW RECORDS OF THE INVERTEBRATE ICHNOFOSSILS
ROBLEDOICHNUS AND TONGANOXICHNUS FROM THE LOWER PERMIAN OF NEW MEXICO

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*Tonganoxichnus robledoensis* and *Robledoichnus lucasi* are ichnotaxa that have previously been reported only from single occurrences in Lower Permian strata of southern New Mexico. Here we record the first occurrence of these ichnotaxa outside of their type localities within the Robledo Mountains Formation, thus augmenting their distribution.

Single specimens of each ichnotaxon occur in association on a slab that was collected from New Mexico Museum of Natural History (NMMNH) locality 5383 in the lower part of the Abo Formation in the Red Gap area of the Fra Cristobal Mountains in Sierra County, New Mexico. The specimens are from a 0.7-meter thick unit of thinly bedded, ripplelaminated sandstone. A low diversity tetrapod ichnofauna that is dominated by *Batrachichnus* occurs at this site. Several specimens of the invertebrate burrow *Taenidium* have also been found. The paleoenvironment was a fluvial sandflat on a coastal floodplain.

NMMNH P-40869 is a positive body imprint that we tentatively assign to *Tonganoxichnus cf. T. robledoensis* Braddy & Briggs, 2002. This bilaterally symmetrical trace shows medial anterior, posterior, and terminal imprints that are characteristic of this ichnospecies. Lateral imprints of similar length differ from the Robledo Mountains Formation type material in their orientation to the mid-line. Braddy and Briggs recognized two types within *T. robledoensis*, thought to represent minor variations in jumping behavior. Both forms have three pairs of lateral imprints that are anteriorly directed. The Fra Cristobal specimen has three pairs of lateral imprints in which; the anterior imprints are anteriorly directed, the medial imprints are laterally directed, and the posterior imprints are posteriorly directed. This orientation is similarly found in *T. buildexensis*, a resting trace that is known from the Upper Carboniferous of Oklahoma, Kansas and Indiana. The Fra Cristobal specimen suggests that orientation of the lateral imprints is either an additional type of behavioral variation within this ichnospecies or a new ichnospecies. More specimens are needed to sample this feature adequately.

P-42176 is a positive trackway that we tentatively assign to *Robledoichnus lucasi* Kozur & Lemone, 1995. Two track rows of walking imprints are shown that contain a twoimprint arrangement comparable to the type specimen from the Shalem Colony section of the Robledo Mountains Formation. A separate landing trace is not preserved. The trackway is 7 cm long and 1 cm in external width. It is separated from P-40869 by a distance of 7 cm. The external width of the trackway coincides with the distal width of the leg appendage imprints seen on the associated *T. robledoensis*. Kozur and Lemone thought that the producer of *R. lucasi* was a flying insect. We propose that *R. lucasi* instead was produced by an apterigote monuran, the same animal that presumably produced *Tonganoxichnus*.