

## RECONSTRUCTING THE MIDDLE MIOCENE PALEOENVIRONMENT OF QUEBRADA HONDA, BOLIVIA, USING ICHNOLOGY AND PALEOPEDOLOGY

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Although the Neotropics are home to exceptional levels of mammalian diversity, there are few fossil-producing localities with which to study the history of these diverse and unique faunas. La Venta, Colombia, and Quebrada Honda, Bolivia are well-sampled, contemporaneous (12-13 Ma; late middle Miocene) Neotropical fossil-producing sites that preserve the remains of many nonvolant mammals (59 and 30 genera, respectively). These two localities have almost no mammalian genera in common, which could reflect different climates and/or habitats. However, unlike La Venta, the paleoenvironment of Quebrada Honda has not been investigated in detail. In this study, paleopedology and ichnology are used as independent lines of evidence to elucidate the habitat of Quebrada Honda. The paleosols of Quebrada Honda are weakly to moderately developed; features of the paleosols include a silty claystone- to silty sandstone-based lithology, slickensides and calcareous nodules. The paleosols appear to represent Entisols and Inceptisols that formed in proximal and distal floodplains, respectively. The ichnofossil suite present in Quebrada Honda paleosols includes *Coprinisphaera*, *Cellicalichnus*, *Psilonichnus*, *Macanopsis* and *Palaeophycus*. These ichnofossils are interpreted as dwelling and breeding structures that were primarily produced by solitary arthropods such as beetles, bees, and spiders. Rhizoliths are also abundant in the paleosols and range from small, branched mm-scale rhizohaloes to tapering, dcm-scale rhizocretions. The small, branched rhizohaloes are interpreted as roots from grasses or small plants, whereas the large, tapering rhizocretions are interpreted as taproots of medium-to-large plants, such as shrubs and trees. Based on the characteristics of the paleosols and the ichnofossils, the paleoenvironment of Quebrada Honda is interpreted as a mixture of seasonal grasslands and savannahs located proximal to alluvial systems. The inferred habitat of Quebrada Honda contrasts with that of La Venta, which has been reconstructed as a mixture of river-associated tropical forests and successional stages thereof. Our initial findings indicate that dissimilar habitats could account for some of the differences between the mammal faunas of Quebrada Honda and La Venta. Ongoing isotopic studies of this site should help refine this paleoenvironmental interpretation and provide constraints on the elevation of the site during the late middle Miocene.

