

NOTOUNGULATA AND LITOPTERNA OF THE EARLY MIOCENE  
CHUCAL FAUNA, NORTHERN CHILE

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ABSTRACT - This study describes the notoungulates and litopterns (endemic South American ungulates) from the Chucal Fauna of northern Chile. Eight species are known to date, including seven notoungulates and one litoptern. The bulk of the toxodontid notoungulate material, including a well-preserved partial skull, is referred to Nesodon imbricatus. A few postcranial elements and a single partial tooth are referred to Adinotherium sp. indet. Poorly preserved dental material may represent a third (indeterminate) toxodontid. Fragmentary dental and postcranial remains are referred to Hegetotherium cf. H. mirabile (Hegetotheriidae). Theosodon sp. indet. (Litopterna: Macraucheniidae) is recorded on the basis of a variety of diagnostic limb bones, but dental remains of this taxon are not yet recorded at Chucal. Three new species of mesotheriid notoungulates are described: Altitypothorium paucidens, Altitypothorium chucalensis, and Eotypothorium chico. The largest, Altitypothorium paucidens, differs from all previously described mesotheriids in the loss of an upper premolar (P3). Altitypothorium chucalensis is represented by an associated skull and mandibles plus postcranial remains. Eotypothorium chico, based on gnathic remains, is the smallest mesotheriid known. Bracketing radioisotopic dates and biostratigraphic correlation argue for referral of the the Chucal Fauna to the Santacrucian South American Land Mammal “Age” (late early Miocene). The forms from Chucal are the only mesotheriids known for this temporal interval and also mark the earliest known occurrence of mesotheriines. A phylogenetic analysis places the three taxa from Chucal as early diverging members of the Mesotheriinae, with Eotypothorium chico representing the outgroup to all remaining members of the clade. In the presence and abundance of mesotheriines and in the absence of interatheriids, the Chucal Fauna more closely resembles geographically proximate (but younger) faunas in Bolivia and the Precordillera of northernmost Chile than temporally correlative faunas from southern South America. This pattern indicates significant faunal provinciality in South American during the late early Miocene and suggests that the intermediate latitudes might have been a center of diversification for mesotheriines, and potentially other groups of mammals.