

## A NEW BASAL GLYPTODONTID AND OTHER XENARTHRA OF THE EARLY MIOCENE CHUCAL FAUNA, NORTHERN CHILE

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**ABSTRACT**—Three cingulates from the early Miocene Chucal Fauna of northern Chile (ca. 17.0–19 Ma; Santacrucian SALMA) are described. A dasypodid, represented by isolated osteoderms, a partial rostrum, and postcranial bones, resembles *Stenotatus patagonicus* (Eutatini), but is ca. 20% smaller (similar in size to *Prozaedyus*) and may represent a new *Stenotatus* species. Two isolated peltephilid osteoderms are referred to cf. *Peltephilus* sp. A new glyptodontid, *Parapropalaeohoplophorus septentrionalis*, is represented by a mandible, ca. 25% of the carapace, a femur, and other postcrania. This new species differs from other glyptodontids in its dentition (triangular n1-3 and distobuccally elongate n2-3), mandible (unexpanded angle, vertical coronoid process), osteoderms (absent/poorly defined peripheral figures, large principal figure positioned along posterior edge), and femur (highly elevated greater trochanter). A second specimen may represent *P. septentrionalis* or a closely related species. No sloths have yet been collected at Chucal. A preliminary phylogenetic analysis of glyptodontids—the first for the group—suggests that Glyptatelinae and Propalaeohoplophorinae are paraphyletic and that *Parapropalaeohoplophorus* is an early diverging glyptodontid, not closely related to other Santacrucian species. The revised faunal list for Chucal, which includes 18 mammals and one frog, is depauperate compared to coeval Patagonian faunas. This fauna probably occupied a relatively open, seasonal habitat. Endemism in the Chucal xenarthrans parallels that in other mammal groups, indicating significant latitudinal provinciality in South America during the early Miocene. Furthermore, the record of a glyptodontid basal to a radiation matches patterns observed in other Chucal groups (e.g., chinchilline rodents, mesotheriine notoungulates).

### INTRODUCTION

Xenarthrans—sloths, armadillos, vermilinguas (‘anteaters’)—are among the most distinctive living Neotropical mammals. Despite their disparate appearance, xenarthrans possess unique accessory vertebral articulations (xenarthrae), bear a reduced dentition, and share a variety of molecular and other morphological characters clearly indicating a unique common ancestry (e.g., Engelmann, 1985; Gaudin, 2003; Springer et al., 2003; Rose et al., 2005). They have been considered an early diverging clade of extant placental mammals (e.g., Novacek and Wyss, 1986; Springer et al., 2003) and consequently have figured prominently in discussions of the geographic origin of Placentalia (Hunter and Janis, 2006). There are about 30 species of extant xenarthrans, most of which are armadillos (Wilson and Reeder, 2005). For the latter two-thirds of the Tertiary, until a mere 10,000 years ago, the group was much more diverse both taxonomically (e.g., triple the number of families) and morphologically (e.g., ground sloths, giant tortoise-like forms, etc.) than it is today (Patterson and Pascual, 1968; Marshall and Cifelli, 1990; Fariña, 1995; McDonald, 2005).

Improved temporal and geographic paleontological sampling benefit our understanding of the the clade’s evolutionary history. The fossil record of xenarthrans, like that of most South American mammals, has come primarily from the southern part of the continent. This is especially true for late Eocene – early Miocene

time, an important interval of origination and radiation of many ‘family-level’ groups in South America (Simpson, 1980; Flynn and Wyss, 1998). Although the geographic extent of South American fossil mammal localities has improved markedly in recent decades (e.g., Kay et al., 1997; Flynn et al., 2003a, b; Campbell, 2004; Linares, 2004; Sánchez-Villagra et al., 2004; Antoine et al., 2006; Cozzuol, 2006; Sánchez-Villagra and Aguilera, 2006; Shockey et al., 2006; Croft, 2007), most low and middle latitude sites are middle Miocene or younger in age, and thus are too young to record the early histories of many xenarthran clades. New specimens from Chucal and other Chilean faunas—nearly all of which predate the middle Miocene—therefore shed much needed light on this critical period of xenarthran evolution (e.g., McKenna et al., 2006).

Here we describe the xenarthrans of the late early Miocene Chucal Fauna of the Altiplano of Chile and provide an updated taxonomic list for the entire fauna. The first fossil mammal from Chucal was discovered 15 years ago (Charrier et al., 1994a) and subsequent fieldwork in 1998, 2001, and 2004 has produced more than 350 additional specimens. A preliminary overview of the fauna (Flynn et al., 2002a) and a detailed study of the ungulates (Croft et al., 2004) have highlighted significant faunal endemism in northern Chile relative to roughly contemporaneous sites in Patagonia. The three xenarthrans described herein—including one or two new species—accentuate this pattern (Croft et al., 2006). The apparent absence of sloths, a diverse and abundant group in contemporaneous early Miocene faunas of Patagonia (as well as later Miocene faunas from the Bolivian Andes, and lowland tropical faunas such as Urumaco, Venezuela and La

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