LATE BLANCA GAZELLE-HORSE NANNIPUS PENINSULARIS (MAMMALIA, EQUIDAE) FROM SCRUMMY COUNTY, TEXAS, WITH IMPLICATIONS FOR BIOCHRONOLOGY

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Abstract
Ongoing excavations at Roland Springs Ranch Locality 1 (RSR-1) in Scurry County, Texas, have produced skeletal remains representing a diverse assemblage of vertebrate life. Remains of small, triadici nes are common in the common sediments of RSR-1. As the most common large horse, the RSR-1 fauna, understanding these diminutive horses is important in determining paleo-community composition. Further, identification of these remains is of importance to biologists. Lacking numeric age determinations, placing the RSR-1 fauna in its correct context remains a major challenge. Ongoing biochronology research is focused on seven taxa, one of which is the horse RSR-1 fauna. The RSR-1 small horse remains are identified as Nannipus peninsularis based on a combination of cheek tooth crown height, and metamodality. This discovery is an important step forward in understanding the 120,000-year-old human occupation of North America.

Introduction
Systematic excavation of the small black mammoth site (RSR-1) in Scurry County, Texas, has produced 124 specimens of horse (Equidae), representing the only known Pleistocene large mammal fauna in Scurry County. This faunal deposit contains 17 species of horse, including the recently described Equus simplicidens, Equus antiquus, and Equus pemexensis. The Pleistocene small horse, Equus simplicidens, is an important addition to the Pleistocene horse fauna of Texas.

Materials & Methods
The RSR-1 miniature sample contains 20 teeth, of which 17 are from the left side of the jaw, and 3 are from the right side. The teeth were measured using digital calipers to the nearest 0.01 mm. The measurements were taken at the mesial and distal ends of the tooth, and at the incisal edge. The measurements were then compared to those of modern and Pleistocene horses to determine the similarities and differences between the two groups.

Results
The RSR-1 sample includes individuals of all ontogenetic stages, represented by deciduous, unworn adult, and fully worn adult upper and lower cheek teeth (Figure 1). A minimum of six individuals, based on Molar, were recorded in the RSR-1 sample. Adult RSR-1 upper cheek teeth (n=8) exhibited small size, small crowns, and low numbers of complex foliate plications, isolated plications (except in heavily worn P2), rounded oval to elongate oval, open hypodont grooves, reduced hypodonties, and abundant hypodental plates, large stomatopyle, and reduced P2 antleranchytes (Figure 2). Adult lower cheek teeth (n=21) exhibited small size, tall crowns, and low numbers of complex foliate plications, isolated plications (except in heavily worn P2s), rounded oval to elongate oval, open hypodont grooves, reduced hypodonties, and abundant hypodental plates, large stomatopyle, and reduced P2 antleranchytes (Figure 2). Adult lower cheek teeth (n=21) exhibited small size, tall crowns, and low numbers of complex foliate plications, isolated plications (except in heavily worn P2s), rounded oval to elongate oval, open hypodont grooves, reduced hypodonties, and abundant hypodental plates, large stomatopyle, and reduced P2 antleranchytes (Figure 2).

Biochronology
Nannipus peninsularis is restricted to the Blancon Land Mammoth Age (Bell et al., 2004). The earliest occurrence of N. peninsularis appears to be from the Blancon component of Rancho El Oceo in Guanajuato, Mexico, with dates of 3-4.2 Ma (Carranza-Castañeda, 2006). Beyond these early Blancon Mexican records, N. peninsularis is a fossil in faunas of southern North America from approximately 3.2-0.1 Ma. The youngest occurrence of N. peninsularis is from Missouri (Bell et al., 2004). This species has a wide geographic range, from northwestern Europe to southern North America and northern South America, and is known from the McDonald Creek deposit in Montana.

Conclusions
The smallest RSR-1 hippos is identified as Nannipus peninsularis based on crown height, absence of protostylist, and melioral elongation. Consequently, the occurrence of Equus simplicidens and Equus antiquus in the RSR-1 sample is significant. These findings suggest that RSR-1 is younger than the middle Blancon Land Mammoth Age, and the horse faunal assemblage is significantly different from that of the early Blancon Land Mammoth Age.