

## PLIOCENE MAMMALIAN BIOSTRATIGRAPHY AND BIOCHRONOLOGY AT LOMA COLORADO DE ABAJO, SANDOVAL COUNTY, NEW MEXICO

GARY S. MORGAN and SPENCER G. LUCAS

New Mexico Museum of Natural History and Science, 1801 Mountain Rd. NW, Albuquerque, NM 87104

Loma Colorado de Abajo is a prominent hill within the city limits of Rio Rancho in Sandoval County, about 20 km northwest of Albuquerque (Loma Machete quadrangle). Beginning in 1990 and continuing until 1996, Paul Knight collected several intriguing specimens of rodents from indurated, fine-grained reddish sandstones near the base of the exposed section on the south-facing escarpment of Loma Colorado de Abajo (New Mexico Museum of Natural History and Science [NMMNH] Site L-1462). The fossil site is located just a few hundred meters behind the recently built Rio Rancho High School, finished in the summer of 1997, although the school did not exist when the fossils were collected. The fossiliferous level is in the Loma Barbon Member in the upper part of the Arroyo Ojito Formation of Connell et al. (1999), about 8 m below the base of the overlying Ceja Member of the same formation (Fig. 1).

Morgan and Lucas (1999, 2000) described the vertebrate fossils as the Loma Colorado de Abajo local fauna (LF), which is limited in diversity, consisting of just three taxa, a small land tortoise and two rodent genera, *Spermophilus* and *Geomys*. The same stratum from which the rodent fossils were collected also contains numerous ichnofossils that appear to be rodent burrows. The Loma Colorado de Abajo LF is unique among New Mexico Blancan faunas in consisting entirely of small, burrowing vertebrates.

A ground squirrel of the genus *Spermophilus* is represented in the Loma Colorado de Abajo LF by a partial skull with P4 from a small species in the size range of living *S. tridecemlineatus*. It is considerably smaller than *Spermophilus* cf. *S. bensoni* from the Blancan of southeastern Arizona (Tomida, 1987), a species tentatively identified from the early Blancan Buckhorn LF in southwestern New Mexico (Morgan et al., 1997). The Loma Colorado *Spermophilus* skull is also smaller than *S. pattersoni* and *S. matachicensis* from the late Hemphillian Yepómera Fauna in northern Mexico (Wilson, 1949; Lindsay and Jacobs, 1985).

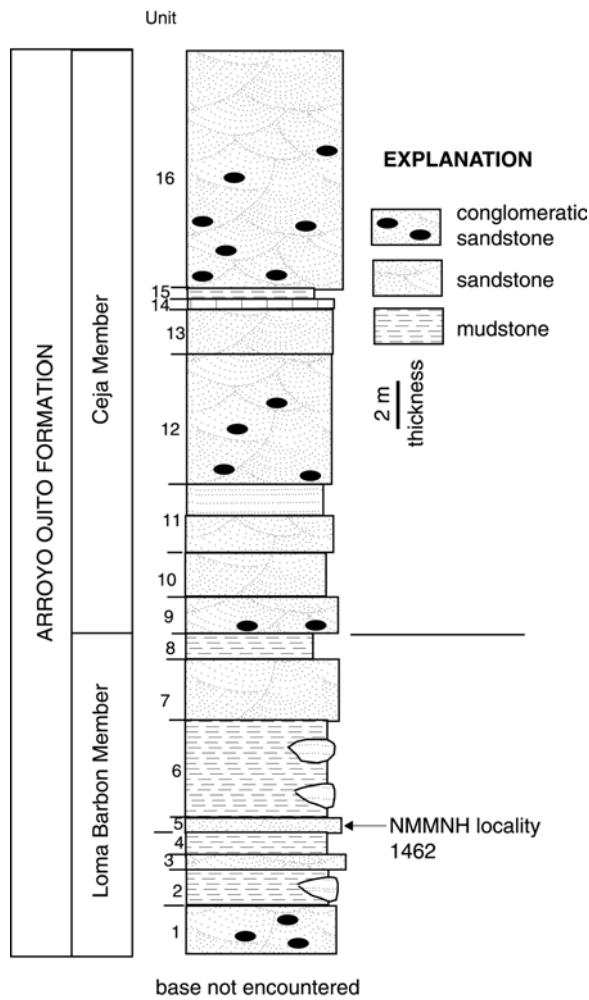
Three specimens from Loma Colorado de Abajo are provisionally referred to the primitive pocket gopher, *Geomys* (*Nerterogeomys*) *minor*, including a nearly complete skull, a rostrum with a complete dentition, and an edentulous left mandible. The two skulls are identified as *Geomys* on the basis of their bisulcate upper incisors, unrooted cheek teeth, and absence of enamel on the posterior surface of P4. Earlier pre-Blancan geomyids such as *Pliogeomys* have rooted

cheek teeth. The fragmentary mandible lacks cheek teeth, but can be identified as a member of the extinct subgenus *Geomys* (*Nerterogeomys*) by the placement of the mental foramen ventral to the masseteric crest (Tomida, 1987). *Geomys* (*Nerterogeomys*) first appears in the early Blancan and becomes extinct in the early Irvingtonian. The Loma Colorado pocket gopher skulls are smaller than most described skulls of *Geomys* (*Nerterogeomys*), and compare most closely to the small species, *G. minor*, known from the early Blancan Rexroad Fauna in Kansas and Verde LF in Arizona, and the medial Blancan Beck Ranch LF in Texas and Benson Fauna in Arizona (Hibbard, 1967; Dalquest, 1978; Czaplewski, 1990). Repenning and May (1986) reported *G. minor* from the early Blancan Truth or Consequences LF from the Palomas Formation in Sierra County in central New Mexico. The Loma Colorado mandible is smaller than pocket gopher mandibles from the Pajarito and Belen faunas in the Albuquerque basin referred to *G. (Nerterogeomys) paenebursarius* (see Morgan and Lucas, 2000). The smaller species of *G. (Nerterogeomys)* that are most similar in size to the Loma Colorado *Geomys* (e.g., *G. minor*) are restricted to the Blancan, whereas the species that survive into the Irvingtonian (e.g., *G. anzensis*, *G. garbanii*, and *G. persimilis*) are larger.

The age of the Loma Colorado de Abajo LF is probably early or medial Blancan. Small species of *Geomys* (*Nerterogeomys*), such as *G. minor*, are typical of faunas of this age. Also, a medial to late Blancan fauna (older than 2.2 Ma) is known from the Ceja Member of the Arroyo Ojito Formation in Tijeras Arroyo, a unit that overlies the Loma Barbon Member. The Loma Colorado de Abajo LF is stratigraphically below and thus older than the Blancan fauna from Tijeras Arroyo. However, these two faunas have no taxa in common, so more detailed biostratigraphic comparisons are not possible.

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**Figure 1.** Stratigraphic section of the Loma Colorado de Abajo site. The top of section is at about 5530 ft (1630 m) elevation and is less than 52 m below the projected top of the Llano de Albuquerque (local top of upper Santa Fe Group).

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