

Galliformes: Phasianidae

- Taxon *Dendrotyx macroura* (Jardine and Selby, 1828)
- Material One skull, one tarsal phalanx.
- Remarks The bones are similar to the recent species. This is the first record for this species, remarkable because this taxon is associated with temperate areas and La Presita cave is in the Chihuahuan Desert.

Passeriformes: Fringillidae

- Material One left tibiotarsus.
- Remarks The material is insufficient for identification to species level because the bones in this group are very similar.

There are also eight unidentified bones, which include a dentary fragment, probably of a species of passeriforme bird.

The fauna identified in La Presita cave belong to the late Pleistocene (Polaco and Butrón M, 1997). Therefore the partridge is the first recorded for this age in Mexico. Future research in this locality could bring an increased bird diversity, since the sample now studied is very small. La Presita cave is quite near two another important Pleistocene localities: El Cedral, at San Luis Potosí; and San Josecito Cave, at Nuevo León. Faunal comparisons among these three localities would improve our regional view of the late Pleistocene.

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A 30,000-Year-Old Megafauna Dung Layer from Gruta del Indio (Mendoza, Argentina)

Alejandro Garcia and Humberto A. Lagiglia

Gruta del Indio (34° 45' S, 68° 22' W) is a rockshelter located south of the city of Mendoza, in the Central Western region of Argentina. Previous research at the site revealed evidence of probable Pleistocene human presence and exploitation of extinct megafauna, along with a palynological record ranging mainly from terminal Pleistocene to present (D'Antoni 1983; Lagiglia 1956,

1979; Semper et al. 1968). New studies are directed toward finding additional evidence for more accurate analysis of these issues. The main focus is a dung layer produced by extinct megafauna that was partially preserved by massive falls of basaltic rocks from the ceiling of the rockshelter. This dung layer has been interpreted as the stratigraphic marker of the Pleistocene/Holocene transition. One set of dates grouped between 11,800 and 9,600 ^{14}C yr B.P. and another date, at first considered erroneous, gave a result of c. 23,500 ^{14}C yr B.P. (Lagiglia 1979). The zooarchaeological record included *Mylodon sp.*, *Megatherium sp.*, and probably *Equus sp.*, but it is not clear yet which of these species produced the excrement.

Recent excavations have indicated that the time interval represented by this stratum is not restricted to the Pleistocene/Holocene transition but is significantly broader. Five radiocarbon dates were run at Latyr (Universidad de la Plata). All samples were extinct megafauna dung extracted from upper, lower, and intermediate portions of the layer. Two dates for its initiation are $30,800 \pm 700$ (LP 918) and $30,200 \pm 800$ (LP 929) ^{14}C yr B.P. The stratigraphic position of the oldest date is ca. 10 cm from the base of the layer. Two dates for the middle portion of the layer are $28,670 \pm 720$ (LP 1072) and $24,140 \pm 510$ ^{14}C yr B.P. (LP 1075). Analysis of the highest sample yielded $8,990 \pm 90$ ^{14}C yr B.P. (LP 925).

These dates suggest that accumulation of the layer spanned the interval from ca. 31,000 to 9,000 ^{14}C yr B.P. Review of the entire set of dates shows a main cluster between c. 11,800 and 9,000 ^{14}C yr B.P., and an earlier group ranging from ca. 31,000 ^{14}C yr B.P. to probably c. 24,000 ^{14}C yr B.P. Thus, rather than resulting from continuous deposition, the layer seems to represent at least two main periods of deposition. If this were the case, the biological record of this layer would represent a notable opportunity to analyze paleoecological changes that occurred after the Last Glacial Maximum.

With respect to megafaunal extinction, the later date recently obtained shows that some of those species did not become extinct until ca. 9,000 ^{14}C yr B.P. Considering that humans have been present in the region since ca. 11,000 ^{14}C yr B.P. (Garcia 1995; Lagiglia 1979), humans and Pleistocene megaherbivores could have coexisted for 2,000 years.

Nevertheless, no reliable evidence of a human/megafauna association was obtained. Seven small pieces of lithic debris (all of them <20 mm long) appeared at different levels in the dung layer, but they were not associated with other cultural material. Furthermore, discovery of rodent dung and bones point out that bioturbation may be responsible for the presence of the lithics in the layer. The low visibility of evidence for bioturbation may reflect the action of some process of homogenization.

The dung layer at Gruta del Indio is the chronologically most extensive of those known in Argentina (Borrero 1994), offering a ca. 20,000-year history of late-Pleistocene paleoecological information. Data about presumably critical shifts in the diet of megafauna would be valuable for studying environmental changes during the regional process of extinction. Future field work will deal with this subject, as well as searching for evidence of late-Pleistocene human presence.

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Radiocarbon Geochronology of Strata Containing *Mammuthus* (Mammoth), Red Rock River, Montana

Christopher L. Hill

The biostratigraphic record near the Red Rock River in Centennial Valley, Montana, consists of fossils of *Mammuthus* (mammoth), other Pleistocene-age vertebrates, and invertebrates (Dundas et al. 1996). If radiocarbon measurements accurately reflect the age of the fossils and surrounding sediments, the sequence contains evidence of middle- and late-Wisconsin paleoenvironments. The older strata may date from about 50,000 to 32,500 yr B.P. Fossils are in secondary taphonomic provenience; they have been redeposited under various sedimentological conditions. The upper part of the sequence dates to perhaps 20,000 yr B.P., since the sediments contain an assemblage of fossils in secondary context ranging from about 25,000 to 20,000 yr B.P.

The lowermost exposed Pleistocene set of sediments is designated as Stratum A (cf. Albanese et al. 1995). Elements of *Mammuthus* found in these sediments include a patella recovered in 1987 that contained no collagen (residue after HCl application). A *Mammuthus* limb bone was observed in the upper 1 m of Stratum A (Bump 1989), and fossils have been found along its upper boundary with overlying Stratum B.

Disarticulated elements of *Mammuthus* and other vertebrates have been recovered in the paludal and swamp-like deposits of Stratum B. This stratum decreases in thickness along the margins of the paleobasin. Collagen (residue after HCl and NaOH application) from tusk recovered in the lower part of Stratum B dates to $32,470 \pm 270$ yr. B.P. (B-111325). Another date of $36,500 \pm 710$ yr. B.P. (B-74032) was obtained from organic sediments recovered from HCl-treated *Mammuthus* limb bone (Albanese et al. 1995). Collagen from a *Mammuthus* fibula from this deposit had an age $>33,990$ yr B.P. (B-36206, Dundas 1992), while an age of $>41,900$ yr. B.P. (B-83614, Dundas et al. 1996) was obtained from humates (residue after HCl/NaOH/HCl washes). One scenario that could account for these measurements would include initial deposition of organics within the paleobasin prior to 40,000 yr B.P., with continued accumulation of sediments and vertebrate remains until about 32,000 yr B.P.

The center of the paleobasin contains organic-rich sediments (Stratum B) overlain by a sedimentary series consisting of interbedded silts and coarser clastics (Stratum C). Several erosional surfaces are present, and the upper section contains secondary carbonates. A distinct boundary typically separates these deposits from the overlying Holocene colluvium.

Closer to the edge of the paleobasin, Test Pit C/94 contains the same upper section stratigraphy dominated by silts, secondary carbonates, and colluvium. Below the sediments of Stratum C are several erosional surfaces separating deposits of fine sands, silts, and clay and some isolated lenses of coarser clastics. The absence of organic-rich deposits and the presence of several erosional surfaces make correlations with the central basin stratigraphy somewhat speculative. The erosional surfaces may separate facies of Stratum C, or the lower deposits could be stratigraphically related to Stratum A or perhaps deposits not present in the central basin. *Mammuthus* collagen (residue after HCl treatment) from the lower part of the sequence dates to $49,350 \pm 150$ yr B.P. (B-116519). It is from a fossil recovered directly below an erosional surface that may mark the "upland" stratigraphic boundary between Stratum C and older sediments. If so, the fossil could have accumulated in deposits older than Strata B and C, providing an indication of the age of the lower part of the sequence. Pleistocene vertebrates within the Test Pit C/94 sequence are in secondary context; thus, while the date can be presumed to provide an estimate of the minimum age of the specimen (cf. Stafford et al. 1991), it may have been redeposited in younger sediments.

Stratum C and the younger colluvium are traceable to the north escarpment, where they appear to overlie a concentration of limestone and quartzite cobbles and boulders mixed with *Mammuthus* and other vertebrates. This assemblage overlies a mollusc-bearing sand that may be a subfacies of Stratum A. The fossils appear to be younger than Stratum A and older than the uppermost part of Stratum C. The vertebrates are in secondary context and thus provide a maximum age for the associated sediments. Collagen (HCl and NaOH-treated residue) dates are $25,030 \pm 520$ (B-36205, on a *Mammuthus* metatarsal, Dundas 1992), $21,500 \pm 100$ (B-11875), and $19,310 \pm 90$ (B-77826, Albanese et al. 1995) yr B.P.