



Camarasaurus cf. Supremus from the Morrison Formation near San Ysidro, New Mexico--The San Ysidro dinosaur

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CAMARASAURUS CF. SUPREMUS FROM THE MORRISON FORMATION NEAR SAN YSIDRO, NEW MEXICO-THE SAN YSIDRO DINOSAUR

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INTRODUCTION

Isolated dinosaur bones are fairly common in exposures of the Morrison Formation in New Mexico. Few, however, have ever been studied or identified. Smith (1967) reported the occurrence of "*Brontosaurus*, *Allosaurus*, and *Stegosaurus*" from the Morrison Formation in Valencia County. Dinosaur faunas of the Morrison Formation in New Mexico remain essentially unstudied (Kues and others, 1977).

DISCOVERY AND EXCAVATION

Information provided to William "Bill" I. Johnstone suggested the presence of dinosaur bones in exposures of the Morrison Formation near San Ysidro, New Mexico. On one of many trips to the area, the first bones of the San Ysidro dinosaur were located by Johnstone. The first observed materials consisted of the distal parts of a pubis and a relatively large rib fragment (W. I. Johnstone, personal commun., 1978). Evidently the site had been visited previously by others because the pubis part was placed upon the alluvial valley fill, above what later proved to be the productive horizon of the *Camarasaurus* quarry. The rib part was located much closer to the now-excavated bone deposit. It was while excavating the rib fragment that additional small excavations were made in the small arroyo bank. One excavation revealed three superposed large rib fragments. Examination of immediately surrounding exposures produced badly weathered "coffee-ground" fragments of other bones. These occurrences were barely visible but served to indicate to Johnstone that the area was worthy of additional excavation.

During subsequent visits to the site, additional bones were located across a small arroyo from the original site. A test excavation was conducted by the staff of the Albuquerque District, Bureau of Land Management (BLM), "Bill" Johnstone, and Barry Kues of the University of New Mexico in May of 1978. This excavation confirmed the

presence of a substantial deposit of large sauropod dinosaur bones on both sides of the small arroyo. This locality (fig. 1) is now popularly referred to as the San Ysidro dinosaur quarry or the *Camarasaurus* quarry (NE $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, sec. 22, T15N, R1E).

During May and June of 1978, approximately 60 volunteers under BLM supervision carefully excavated the bones from the surrounding shales and clay-pebble conglomerates. Overburden was removed with a backhoe to the approximate level of the bone layer. The remaining matrix was removed by hand with hammers and awls. The major concentration of bones was uncovered and mapped prior to the removal of any of the bones.

Approximately 20 percent of a skeleton of *Camarasaurus* cf. *supremus* was recovered (fig. 2). Collected parts include most of the dorsal vertebral series, some caudal vertebrae, a single(?) cervical vertebra, several chevrons, numerous rib fragments, pubis, and partial ilium. The excavation also produced some carnosaur teeth identified by James Madsen (personal commun., 1981) as belonging to *Allosaurus* cf. *fragilis*. Madsen suggested that all were worn and hence were probably shed during feeding upon the *Camarasaurus* carcass.

The site was temporarily closed after the major bone concentration was removed in June, 1978, but additional excavation and subsequent reclamation was planned. An effort was made by the BLM in May, 1980, to determine if any other bones were present in the immediate vicinity. A bulldozer was used to remove overburden in a 10-20-m wide belt surrounding the original excavation. No additional bones were found. The site was recontoured, reclaimed, and abandoned.

During the excavation, a relatively large thunderstorm moistened parts of the quarry. We observed that even the slightest amount of water would cause swelling of the clay matrix, which should substantially fracture the bones. In some instances the bones themselves might experience this swelling which would result in reducing the bones to a "coffee-ground" consistency. Thereafter, care was taken to protect the

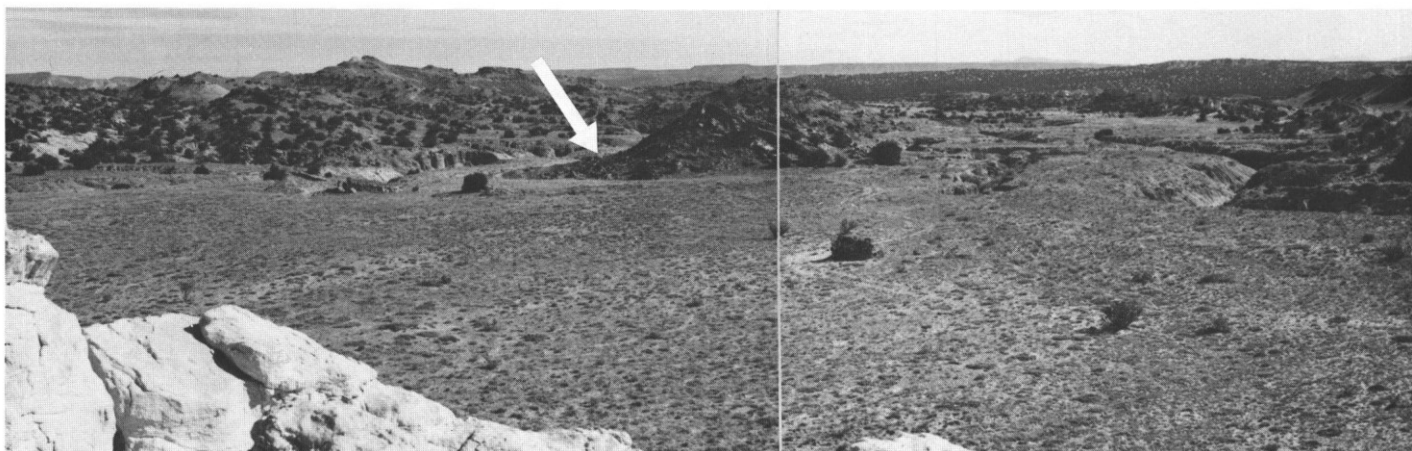


Figure 1. View looking southeast of Jurassic Morrison Formation, Cretaceous Dakota Sandstone, and lowermost Mancos Shale. The photograph was taken approximately 8 km (5 mi) southwest of San Ysidro, New Mexico. The *Camarasaurus* quarry is located at the bottom of a small arroyo just below the point of the arrow.



Figure 2. The *Camarasaurus* quarry as it appeared early in the excavation. Three centra of the large dorsal vertebrae are indicated by arrows. Newspaper has been used to mark locations of unexcavated bone. Approximately one-quarter of the collected bones are visible at this stage of excavation.

bones from any contact with water. This observed rapid weathering may be the reason why so few Morrison Formation dinosaurs have been reported in New Mexico. Natural weathering processes, particularly in the shale zones, may proceed so rapidly that the bones are totally destroyed at the surface and therefore do not leave the typical surface litter of bone fragments by which dinosaur localities are recognized.

The BLM has transferred title of the lands surrounding the *Camarasaurus* quarry to the Zia Indian tribe pursuant to Congressional legislation. Those wishing to visit the site should first obtain permission from the Zia tribe.

ACKNOWLEDGMENTS

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Dinosaur collecting?—picnic, 1895 (Albuquerque Museum Photoarchives).