New topotypes of *Alamosaurus sanjuanensis* Gilmore (Reptilia: Sauropoda)

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Hitherto undescribed examples of the ilium and sacrum of the sauropod dinosaur *Alamosaurus sanjuanensis* have recently been found in the collections of the Palæontological Institute, Uppsala. These examples were recovered from the same horizon (Upper Cretaceous of New Mexico) and locality as the type specimens.

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Introduction

The genus and species of *Alamosaurus sanjuanensis* were erected by Gilmore in 1922 and were based upon a right ischium and left scapula from the same Upper Cretaceous locality as the Uppsala specimens. Subsequent to Gilmore's description of these specimens in 1922, more were found in what is believed to be stratigraphically equivalent beds in Utah, thus enabling him to base his new species on more substantial evidence (Gilmore 1946). By this time, the pectoral girdle and limb, the caudal vertebrae and two ischia had been described. The specimens comprise the last sacral vertebra with the first two caudals and a fragment of the ilium. Some very poorly preserved cervical vertebrae are also present. The bones in the Uppsala collection thus constitute previously unknown topotypes. These fragments were collected and identified by Ch. Sternberg in 1922 from Barrel Spring, Ojo Alamo, San Juan County in New Mexico.

Description

Ilium. — Only a fragment of the right bone remains: this is the part surrounding the acetabulum (fig. 1). The upper and posterior border of the acetabulum is almost perfectly preserved, showing a strong two dimensional curvature.

The pubic peduncle is almost complete with a length of 31,0 cm and only part of the distal end

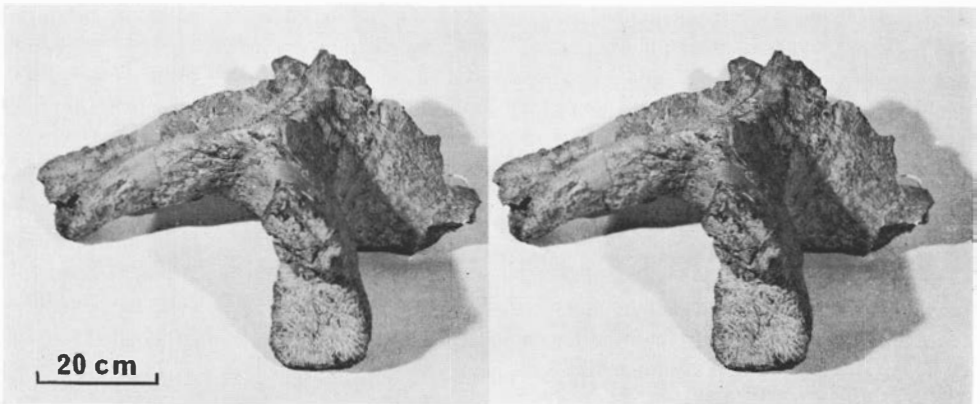

Fig. 1. Stereo photograph of the right ilium of *Alamosaurus sanjuanensis*; ventro-lateral view.

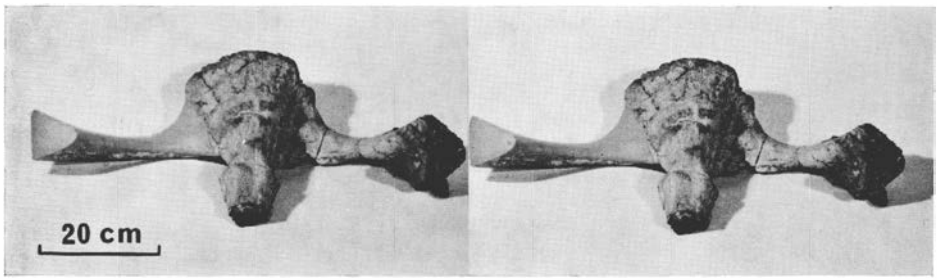

Fig. 2. Stereo photograph of the sacral vertebra and the first and second caudal vertebrae; postero-ventral view.

is missing. In cross section, this process is ellipsoidal (22,5 cm by 3,0—4,0 cm). The angle at which this peduncle protrudes from the main blade of the ilium is almost a right angle. There is very little evidence for any significant ischial peduncle. Although the main blade of the ilium is missing, the blade can be seen to project anteriorly at a similar level as on the posterior side.

Sacrum. — The material preserved includes almost three vertebrae: the posterior sacral, the first caudal, and part of the second caudal. In each case, only the centra are preserved, except for the right transverse process of the sacral (fig. 2).

The anterior end of the sacral vertebra forms a deep concave cup which presumably accommodated the convex process of the preceedng sacral vertebra. There is a substantial taper to this centrum because the anterior width is 29,0 cm, whereas the posterior width is only 13,0 cm. The base of the right sacral rib is broad, stretching from the anterior of the sacral vertebra to approximately one third the length of the first caudal. This length is 28,5 cm. At its narrowest, this rib has an oval cross section with a width of 5,0 cm; the length cannot be measured, because the dorsal part of the rib is missing. From the constricted centre, the rib expands out to meet the ilium, a fragment of which is attached to the extreme end of the rib. Here also, a fragment of another rib is seen attached to the ilium fragment (fig. 2); this would appear to have connected with the neural arch of the first caudal. The cross section of the rib fragment is oval, and of similar proportions to that of the complete sacral rib. Here, the length of the fragment section can be estimated to be 20,0 cm; it would appear that the ribs have an almost blade-like form.

The length of the sacral vertebra and the first caudal is 14,0 cm each, and the estimated width of the sacral vertebra with the two sacral ribs is 80,0 cm. The middle vertebra, the first caudal, is quite symmetrical in shape, being extended at each end. The widths of the proximal, median and distal parts are respectively: 13,5 cm, 7,5 cm, and 11,5 cm.

The posterior vertebra of this specimen, the second caudal, is incomplete, but appears to be very similar to the first caudal. It is, however, slightly larger with the median width being 8,5 cm, and the proximal width also being a little greater than the distal end of the first caudal. This bone has a distinct furrow on the facing (ventral) surface running the length of the centrum. The furrow is most pronounced proximally, where the ridges on either side of the furrow rise into small knobs, probably hemal arch remnants. This feature is also seen in the first caudal, but is much less pronounced.

The joints between these vertebrae are very close, thus the nature of the articulating facets cannot be elucidated. Gilmore (1946) describes the caudal vertebrae as being procoelus.

Conclusion

It is apparent that these bones belonged to a large sauropod of rather late geological occurrence. Because these specimens are fragmentary and not particularly well preserved, a detailed comparative study is not viable. The above description and the fact that these specimens were collected from the same locality as Gilmore's type specimen, suggest that they belong to the species *Alamosaurus sanjuanensis*, thus making them topotypes.

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