

# A NEW SPECIES OF *DESMATOSUCHUS* (ARCHOSAURIA: AETOSAURIA) FROM THE UPPER TRIASSIC OF THE CHAMA BASIN, NORTH-CENTRAL NEW MEXICO

KATE E. ZEIGLER, ANDREW B. HECKERT and SPENCER G. LUCAS

New Mexico Museum of Natural History, 1801 Mountain Road NW, Albuquerque, NM 87104-1375

**Abstract**—We describe a new species of the aetosaur *Desmatosuchus*, *D. chamaensis*, from the Upper Triassic Snyder quarry, Petrified Forest Formation of the Chinle Group, Chama basin of north-central New Mexico. *D. chamaensis* is also present in the Bull Canyon Formation of east-central New Mexico. *D. chamaensis* is distinguished from the type and only other species of *Desmatosuchus*, *D. haplocerus*, by the presence of long recurved spikes on the dorsal scutes as well as small recurved spikes that are pyramidal in cross-section on the lateral scutes. *Desmatosuchus* is now a more robust index fossil, as *D. haplocerus* ranges from Otischalkian to earliest Revueltian, whereas *D. chamaensis* is an index fossil of the Revueltian. The evolution of *D. haplocerus* into the more spinous *D. chamaensis* is most parsimoniously interpreted as anagenetic.

**Keywords:** Aetosaur, *Desmatosuchus*, anagenesis, Petrified Forest

## INTRODUCTION

The Late Triassic Snyder quarry, located in north-central New Mexico near Ghost Ranch, has produced a remarkable array of fossil vertebrates (Heckert et al., 1999, 2000). This locality, in the Petrified Forest Formation of the Chinle Group in the Chama River basin (Fig. 1), is the richest and most diverse Chinle bonebed discovered in the last 50 years. Tetrapod taxa recovered from the quarry include the aetosaur *Typhothorax coccinarum*, *Pseudopalatus*-grade phytosaurs, the theropod *Eucoelophysis*, and a species of the aetosaur *Desmatosuchus* that is distinctly different from the species *D. haplocerus* first identified by Cope (1892). Here, we describe this new species of *Desmatosuchus*. NMMNH = New Mexico Museum of Natural History, Albuquerque, and UCM = University of Colorado Museum, Boulder.

## SYSTEMATIC PALEONTOLOGY

Superorder ARCHOSAURIA Cope, 1869

Order CROCODYLOTARSI Benton and Clark, 1988

Suborder AETOSAURIA Nicholson and Lydekker, 1889

Family STAGONOLEPIDIDAE Lydekker, 1887

Subfamily DESMATOSUCHINAE Huene, 1942

Genus *Desmatosuchus* (Cope, 1892)

*Desmatosuchus chamaensis*, new species

(Fig. 2)

1985 *Desmatosuchus* sp.: Carpenter and Parrish, p. 197-198

1986 *Desmatosuchus* sp.: Parrish and Carpenter, p. 152, fig. 11.3

1994 *Desmatosuchus* sp.: Hunt, p. 278, fig. 37A.

**Holotype:** NMMNH P-32793 (Fig. 2D), an incomplete right presacral paramedian scute.

**Paratypes:** NMMNH P-32795 (Fig. 2A-B), a nearly complete right presacral paramedian scute; NMMNH P-32797 (Fig. 2E), a right presacral paramedian scute; NMMNH P-31295 (Fig. 2F), a right lateral scute; NMMNH P-32796 (Fig. 2G), a left lateral scute; NMMNH P-33099, an incomplete left cervical or presacral paramedian (Fig. 2J); and NMMNH P-33100, a third lateral cervical horn (Fig. 2K-L); NMMNH P-29045, an incomplete right? cervical lateral scute.

**Type horizon and locality:** Petrified Forest Formation of

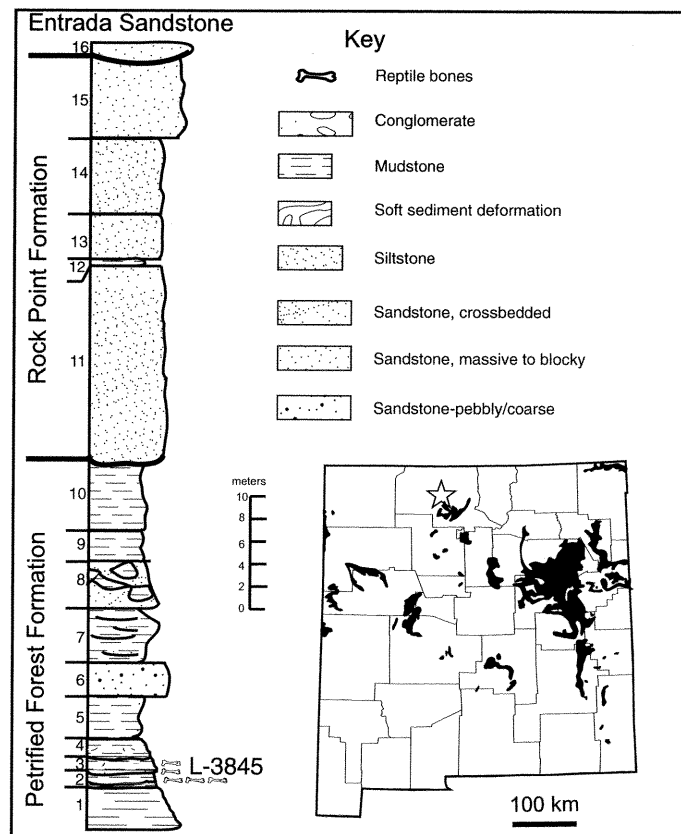


FIGURE 1. Index map and measured stratigraphic section of the type locality of *D. chamaensis*. Shading on state map is Triassic outcrops.

the Chinle Group at NMMNH locality 3845, northwest of Abiquiu in Rio Arriba County, New Mexico. The quarry is approximately 60 m below the base of the Entrada Sandstone and 28 m below the Rock Point Formation of the Chinle Group (Fig. 1). The locality is mid- to late Norian in age (~215 Ma) and is within the Revueltian faunachron based on the presence of the index fossils *Typhothorax coccinarum* and *Pseudopalatus* (Lucas, 1998).

**Referred specimens:** From the Bull Canyon Formation in